

CLASS B RELEASE TDR No. 03735 DATE 10/8/63

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY AUTHORIZED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT HEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.

2. INSPECTION AND ACCEPTANCE:

A. MATERIAL:

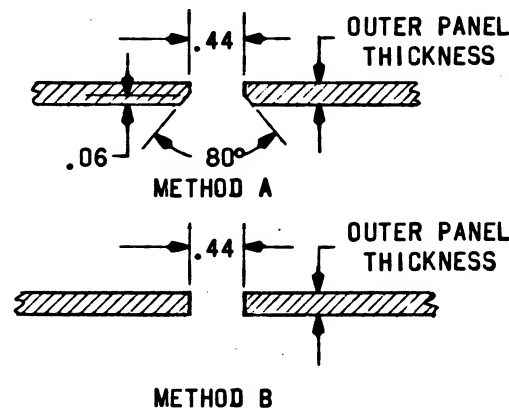
- (1) SCREW: STAINLESS STEEL, TYPE 303 PER MIL-S-7720, COMP FMS.
- (2) SPRING: STAINLESS STEEL, TYPE 302 PER QQ-W-423.
- (3) STAND-OFF: STAINLESS STEEL, TYPE 305 PER AMS, 5514-A
- (4) RETAINER: STAINLESS STEEL TYPE 302 PER MIL-S-5059, COMP 302.

B. FINISH: PASSIVATE.

C. DIMENSIONS: AS SHOWN ON PICTURE.

D. MARKING:

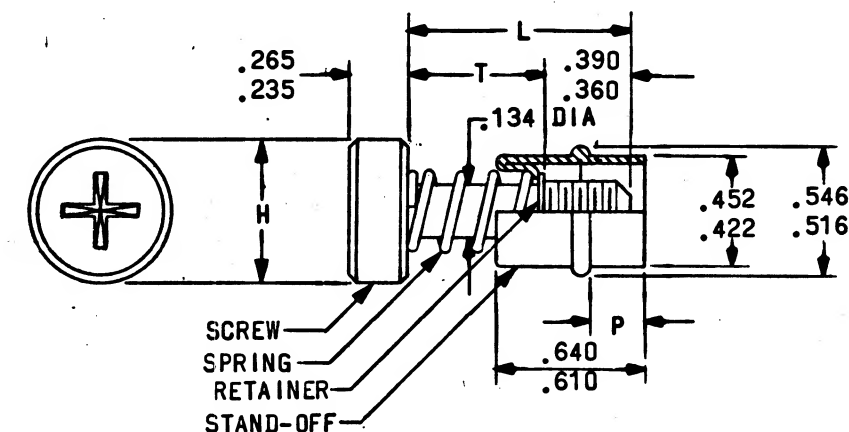
- (1) PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME
NASA PART NUMBER, AND REVISION LETTER
DATE CODE, OR DATE OF MANUFACTURE
- (2) MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.



FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 03735 DATE 10/8/63

NASA DASH NUMBER	PART DESCRIPTION	THREAD SIZE	H	L	P	T	DESIGN INFORMATION (REF)		MANUFACTURER'S PART NUMBER
							OUTER PANEL THICKNESS	STANDOFF INSTALLATION METHOD	
-001	ASSEMBLY	10-32 NF-3A	.452 .422	1.015 .985	.202 .172	.640 .641	.094-.140	B	53-99-141-24
-101	SCREW								58-99-534-02
-201	STANDOFF								58-33- 32-24
-301	RETAINER								58-42- 3-24
-401	SPRING								58-53-103-24
-002	ASSEMBLY	10-32 NF-3A	.452 .422	1.202 1.172	.265 .235	.828 .798	.156-.203	B	TO BE ASSIGNED
-102	SCREW								
-202	STANDOFF								
-302	RETAINER								
-402	SPRING								



THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

REPLACES REV B WITH CHANGE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <u>BENDER</u> DATE <u>16 SEP 63</u> CHECKED <u>SALES</u> DATE <u>20 SEP 63</u> APPROVAL <u>KEMPAINEN</u> DATE <u>26 SEP 63</u> APPROVAL <u>[Signature]</u> DATE <u>1/2/64</u>		FASTENER - SPRING EJECTED	
NASA APPROVAL <u>[Signature]</u> DATE <u>1/2/64</u> MIT APPROVAL <u>[Signature]</u> DATE <u>1/2/64</u>		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		CODE IDENT NO.	NASA DRAWING NO.
FINAL FINISH SEE REQUIREMENTS		C	1016122
APPLICATION		SCALE NONE	WT
		SHEET 1 OF 1	

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REQUIREMENTS:

1. GENERAL:

- A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.

2. INSPECTION AND ACCEPTANCE:

A. MATERIAL:

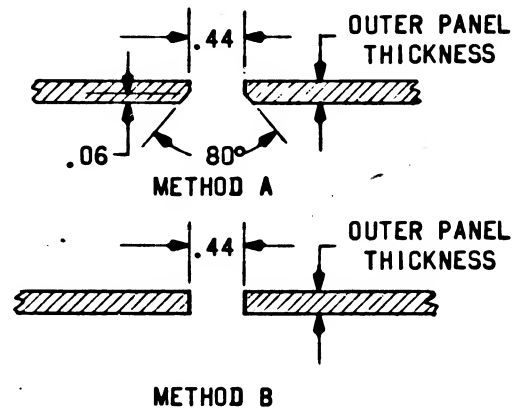
- (1) SCREW: STAINLESS STEEL, TYPE 303 PER MIL-S-7720, COMP FMS.
(2) SPRING: STAINLESS STEEL, TYPE 302 PER QQ-W-423.
(3) STAND-OFF: STAINLESS STEEL, TYPE 305 PER AMS, 5514-A
(4) RETAINER: STAINLESS STEEL TYPE 302 PER MIL-S-5059, COMP 302.

B. FINISH: PASSIVATE PER MIL-F-14072, E-300

C. DIMENSIONS: AS SHOWN ON PICTURE.

D. MARKING:

- (1) PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME
NASA PART NUMBER, AND REVISION LETTER
DATE CODE, OR DATE OF MANUFACTURE
(2) MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

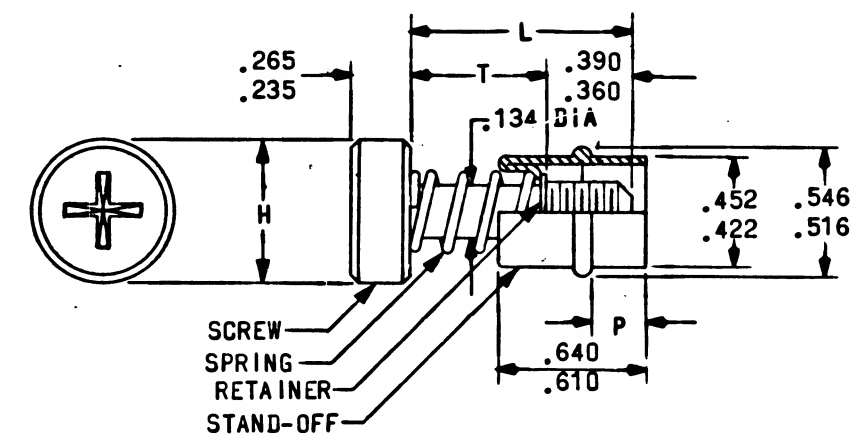


REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
C	REPLACES REV. B WITH CHANGE PER CM 193675 REVISED PER TDR 06206	10 JAN 64	JWP MEM
D	CHANGE IN ACCORDANCE WITH CM-196279 PER TDR 7690	25 MAR 64	WRC EF

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 03735 DATE 10/8/63

NASA DASH NUMBER	PART DESCRIPTION	THREAD SIZE	H	L	P	T	DESIGN INFORMATION (REF)		MANUFACTURER'S PART NUMBER
							OUTER PANEL THICKNESS	STANDOFF INSTALLATION METHOD	
-001	ASSEMBLY	10-32 NF-3A	.452	1.015	.202	.640	.094-.140	B	53-99-141-24
-101	SCREW		.422	.985	.172	.641			58-99-534-02
-201	STANDOFF								58-33-32-24
-301	RETAINER								58-42-3-24
-401	SPRING								58-53-103-24
-002	ASSEMBLY	10-32 NF-3A	.452	1.202	.265	.828	.156-.203	B	53-99-144-24
-102	SCREW		.422	1.172	.235	.798			58-99-534-05
-202	STANDOFF								58-33-33-24
-302	RETAINER								58-42-3-24
-402	SPRING								58-53-103-24



THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

REPLACES REV B WITH CHANGE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN BENDER DATE 16 SEP 63 CHECKED SALES DATE 20 SEP 63 APPROVAL KEMPAINEIN DATE 26 SEP 63 APPROVAL [Signature]		FASTENER - SPRING EJECTED	
NASA APPROVAL [Signature] MIT APPROVAL [Signature]		SPECIFICATION CONTROL DRAWING	
CODE IDENT NO. C		NASA DRAWING NO. 1016122	
SCALE NONE		SHEET 1 OF 1	

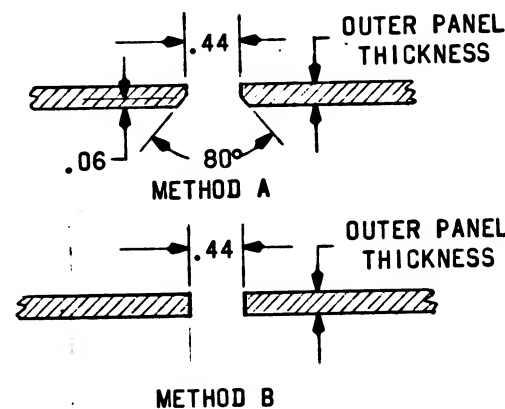
PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± .005 ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		SEE REQUIREMENTS
NEXT ASSY	USED ON	
APPLICATION		

NOTE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

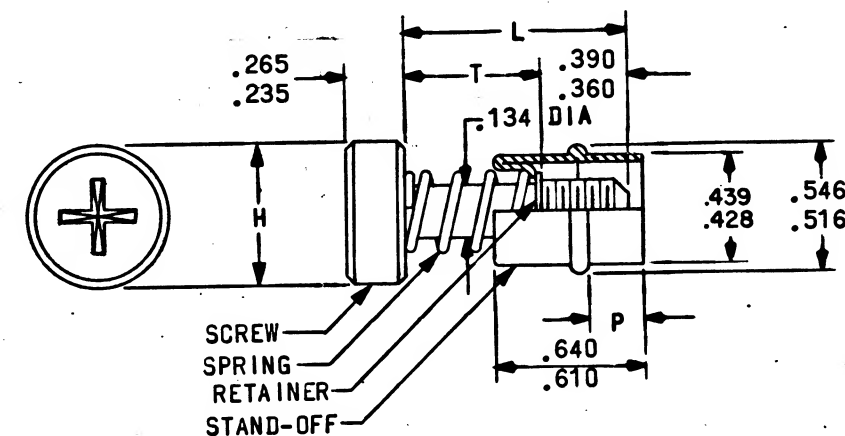
1. GENERAL:
 - A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
2. INSPECTION AND ACCEPTANCE:
 - A. MATERIAL:
 - (1) SCREW: STAINLESS STEEL, TYPE 303 PER MIL-S-7720, COMP FMS.
 - (2) SPRING: STAINLESS STEEL, TYPE 302 PER QQ-W-423.
 - (3) STAND-OFF: STAINLESS STEEL, TYPE 305 PER AMS, 5514-A
 - (4) RETAINER: STAINLESS STEEL TYPE 302 PER MIL-S-5059, COMP 302.
 - B. FINISH: PASSIVATE PER MIL-F-14072, E-300
 - C. DIMENSIONS: AS SHOWN ON PICTURE.
 - D. MARKING:
 - (1) PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION PER MIL-STD-129:
 - SUPPLIER'S NAME
 - NASA PART NUMBER, AND REVISION LETTER
 - DATE CODE, OR DATE OF MANUFACTURE
 - (2) MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE PER ND1002019.



REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
C	REPLACES REV. B WITH CHANGE PER CM 193675 REVISED PER TDR 06206	10 JAN 64	JWP MEM
D	CHANGE IN ACCORDANCE WITH CM-196279 PER TDR 7690	25 MAR 64	WIL EF
E	REVISED PER TDR 10935	24 JUL 64	JWP

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 03735 DATE 10/8/63



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NASA DASH NUMBER	PART DESCRIPTION	THREAD SIZE	H	L	P	T	DESIGN INFORMATION (REF)		MANUFACTURER'S PART NUMBER
							OUTER PANEL THICKNESS	STANDOFF INSTALLATION METHOD	
-001	ASSEMBLY	10-32 NF-3A	.452 .422	1.015 .985	.195 .181	.640 .610	.094-.140	B	53-99-141-24
-101	SCREW								58-99-534-02
-201	STANDOFF								58-33-32-24
-301	RETAINER								58-42-3-24
-401	SPRING								58-53-103-24
-002	ASSEMBLY	10-32 NF-3A	.452 .422	1.202 1.172	.257 .243	.828 .798	.156-.203	B	53-99-144-24
-102	SCREW								58-99-534-05
-202	STANDOFF								58-33-33-24
-302	RETAINER								58-42-3-24
-402	SPRING								58-53-103-24

NOTE:

- I. FASTENER ASSEMBLIES -001 AND -002 WILL BE SHIPPED UNASSEMBLED.
- PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

QTY REQ		PART OR IDENTIFYING NO.		NOMENCLATURE OR DESCRIPTION		FIND NO.
LIST OF MATERIALS						
MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497				MANNED SPACECRAFT CENTER HOUSTON, TEXAS		
DRAWN BENDER DATE 16 SEP 63 CHECKED SALES 20 SEP 63 APPROVAL KEMPAINFIN 26 SEP 63				FASTENER - SPRING EJECTED		
APPROVAL [Signature]				SPECIFICATION CONTROL DRAWING		
NASA APPROVAL [Signature]				CODE IDENT NO.	SIZE	NASA DRAWING NO.
MIT APPROVAL [Signature]				C	C	1016122
SCALE NONE				WT	SHEET 1 OF 1	

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REQUIREMENTS:

1. GENERAL:

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2. INSPECTION AND ACCEPTANCE:

A. MATERIAL:

- (1) SCREW: STAINLESS STEEL, TYPE 303 PER MIL-S-7720, COMP FMS.
(2) SPRING: STAINLESS STEEL, TYPE 302 PER QQ-W-423.
(3) STAND-OFF: STAINLESS STEEL, TYPE 305 PER AMS, 5514-A
(4) RETAINER: STAINLESS STEEL TYPE 302 PER MIL-S-5059, COMP 302.

B. FINISH: PASSIVATE PER MIL-F-14072, E-300

C. DIMENSIONS: AS SHOWN ON PICTURE.

D. MARKING:

- (1) PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION PER MIL-STD-129:
SUPPLIER'S NAME
NASA PART NUMBER

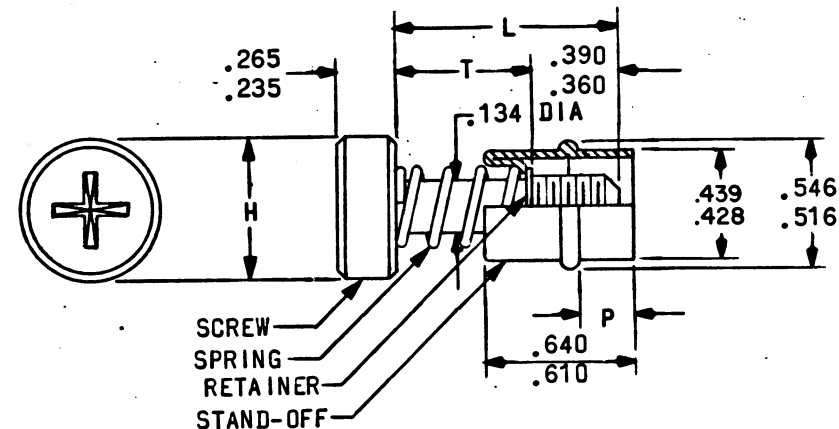
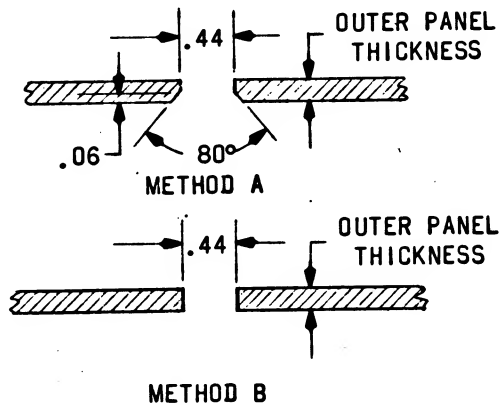
- (2) MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE PER ND1002019.

NASA DASH NUMBER	PART DESCRIPTION	THREAD SIZE	H	L	P	T	DESIGN INFORMATION (REF)	
							OUTER PANEL THICKNESS	STANDOFF INSTALLATION METHOD
-001	ASSEMBLY	10-32 UNF-2A	.452 .422	1.015 .985	.195 .181	.640 .610	.094-.140 .171-.203	B A
-101	SCREW							
-201	STANDOFF							
-301	RETAINER							
-401	SPRING							
-002	ASSEMBLY	10-32 UNF-2A	.452 .422	1.202 1.172	.257 .243	.828 .798	.156-.203 .234-.265	B A
-102	SCREW							
-202	STANDOFF							
-302	RETAINER							
-402	SPRING							
-003	ASSEMBLY	10-24 UNC-2A	.452 .422	1.015 .985	.195 .181	.640 .610	.094-.140 .171-.203	B A

NOTE:

I. FASTENER ASSEMBLIES -001, -002 AND -003 WILL BE SHIPPED UNASSEMBLED.

PROCURE ONLY FROM SOURCES LISTED ON CONTRACTOR'S ACCEPTABLE SUPPLIERS LIST.



THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

REPLACES REV B WITH CHANGE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN BENDER DATE 20 SEP 63 CHECKED SALES DATE 20 SEP 63 APPROVAL KEMPAININ 26 SEP 63 APPROVAL J. G. Gorman 1/2/64		FASTENER - SPRING EJECTED	
NASA APPROVAL [Signature] MIT APPROVAL [Signature]		SPECIFICATION CONTROL DRAWING	
CODE IDENT NO. C SIZE C		NASA DRAWING NO. 1016122	
SCALE NONE		SHEET 1 OF 1	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
TOLERANCES ON	
FRACTIONS DECIMALS ANGLES	
± .005 ±	
DO NOT SCALE THIS DRAWING	
MATERIAL	
SEE REQUIREMENTS	
HEAT TREATMENT	
NONE	
FINAL FINISH	
SEE REQUIREMENTS	
NEXT ASSY	USED ON
APPLICATION	

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REQUIREMENTS:

GENERAL:

INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.

SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

INSPECTION AND ACCEPTANCE:

MATERIAL:

SCREW: STAINLESS STEEL, TYPE 303 PER MIL-S-7720, COMP FMS.

SPRING: STAINLESS STEEL, TYPE 302 PER QQ-W-423.

STAND-OFF: STAINLESS STEEL, TYPE 305 PER AMS, 5514-A

RETAINER: STAINLESS STEEL TYPE 302 PER MIL-S-5059, COMP 302.

FINISH: PASSIVATE.

DIMENSIONS: AS SHOWN ON PICTURE.

MARKING:

PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:

SUPPLIER'S NAME

NASA PART NUMBER, AND REVISION LETTER

DATE CODE, OR DATE OF MANUFACTURE

MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

APPLICATION DATA (FOR REFERENCE):

FOR USE WITH PANEL THICKNESS .141
.094

	NASA PART NUMBER	SOUTH CO PART NUMBER
ASSEMBLY	1016122-001	TO BE ASSIGNED
SCREW	-101	
STAND-OFF	-201	
RETAINER	-301	
SPRING	-401	

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

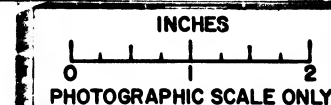
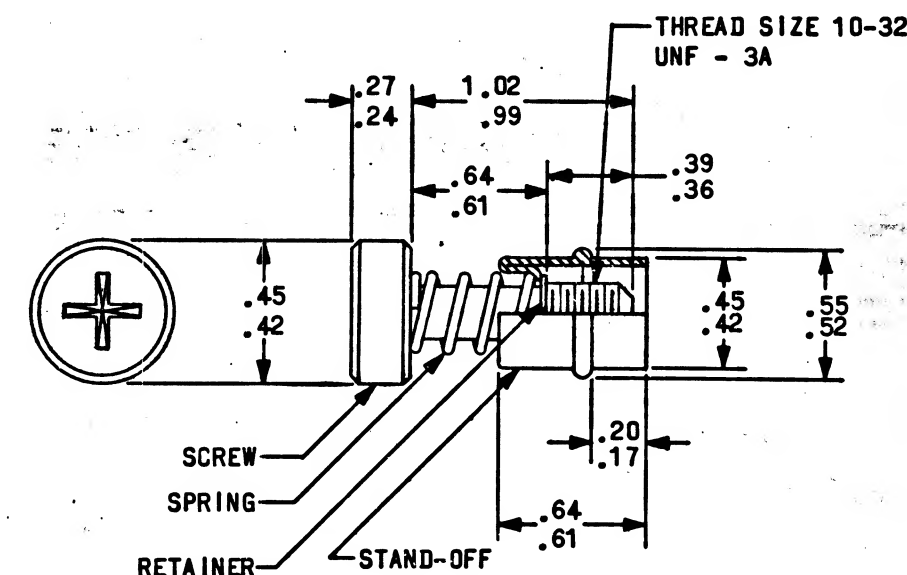
MASTER

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ± DO NOT SCALE THIS DRAWING MATERIAL SEE REQUIREMENTS HEAT TREATMENT NONE FINAL FINISH SEE REQUIREMENTS APPLICATION
NEXT ASSY	USED ON	

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. NAS9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Bender</i> 16-SEP-63 CHECKED <i>Hofman</i> 20 SEP 63 APPROVAL <i>Hofman</i> 22 SEP 63 APPROVAL <i>Gelman</i> 10 SEP 63		FASTENER - SPRING EJECTED	
NASA APPROVAL <i>W. J. Rhine</i> 10 SEP 63 MIT APPROVAL <i>W. J. Rhine</i> 10 SEP 63		SPECIFICATION CONTROL DRAWING	
CODE IDENT NO.		SIZE C	NASA DRAWING NO. 1016122
SCALE NONE		WT	SHEET 1 OF 1

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 03735 DATE 10/8/63



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REQUIREMENTS:

GENERAL:

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SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

INSPECTION AND ACCEPTANCE:

MATERIAL:

BLOCK: AMS3252 (CORK AND NEOPRENE)

BACK: 6061-T6 ALUMINUM ALLOY, SPEC. QQ-A-270, COND. T

BACK: ANODIZE PER SPEC AN-QQ-A-696

DIMENSIONS: AS SHOWN ON PICTURE

HARDNESS DUROMETER: 70-80

TEMPERATURE RANGE: -40°F TO 212°F

MARKING:

PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:

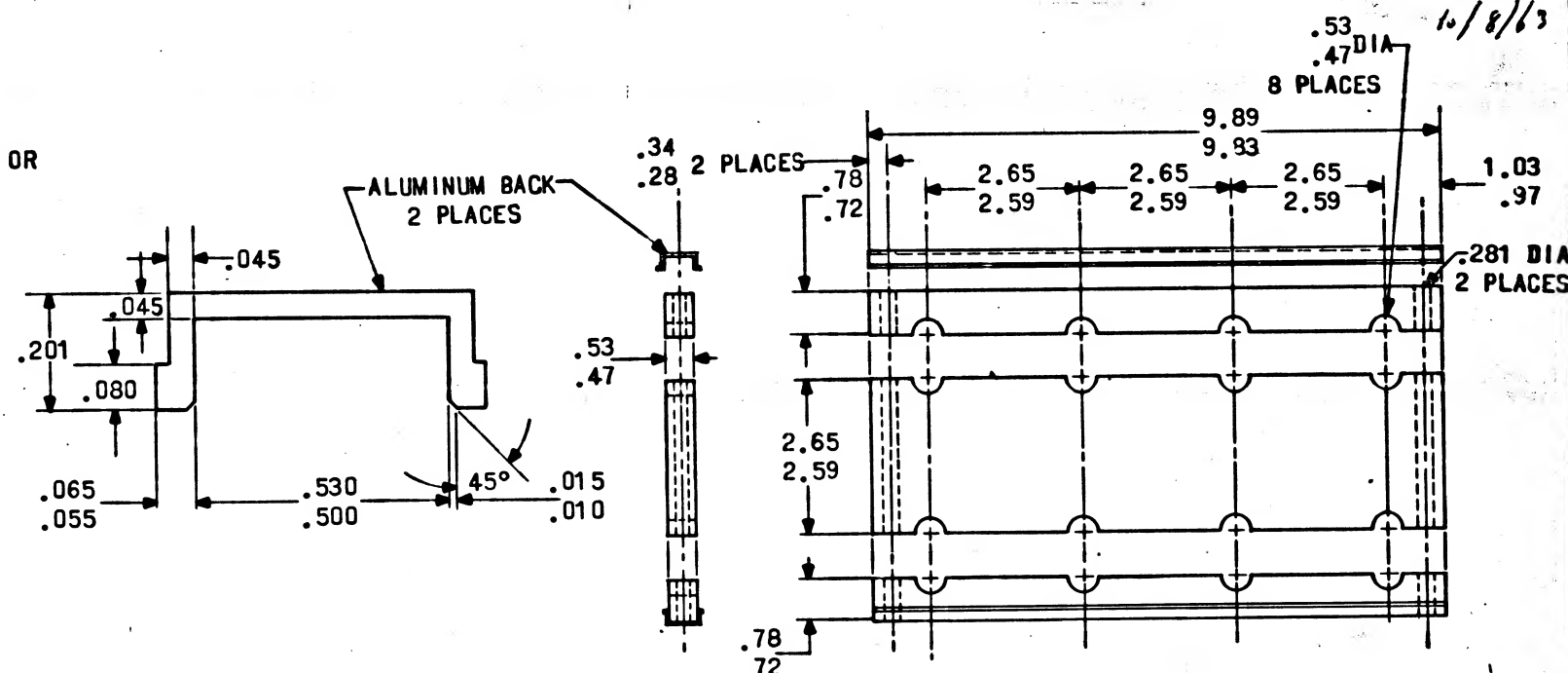
SUPPLIER'S NAME

NASA PART NUMBER, DASH NUMBER, AND REVISION LETTER

DATE CODE, OR DATE OF MANUFACTURE

MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

NASA PART NUMBER	TA PART NUMBER
1016124-001	TO BE ASSIGNED

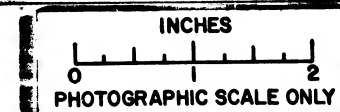


FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 03236 DATE 10/8/63

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS CONTRACT 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>R. W. Turner</i> DATE 17 SEP 63 CHECKED <i>R. W. Turner</i> 20 SEP 63 APPROVAL <i>R. W. Turner</i> 22 SEP 63		LINE SUPPORT BLOCK	
MATERIAL SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		CODE IDENT NO.	NASA DRAWING NO.
FINAL FINISH NONE		SIZE C	1016124
NEXT ASSY	USED ON	SCALE NONE	WT
APPLICATION		SHEET 1 OF 1	



1016126

REQUIREMENTS:
GENERAL:
INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND-1015404, CLASS 3.
INSPECTION AND ACCEPTANCE:
MECHANICAL REQUIREMENTS:
MATERIAL:
COLD ROLLED STEEL
FINISH:
CADMIUM PLATED, YELLOW CHROMATE
DIMENSIONS:
PER DRAWING
MARKING:
PIECEMARKING - PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA PART NUMBER, AND REVISION LETTER.
PACKAGE - INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME
NASA PART NUMBER AND REVISION LETTER
DATE CODE, OR DATE OF MANUFACTURE
MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

REVISIONS			
SYM	DESCRIPTION	CHG NO.	DATE
A	REPLACED WITH CHANGE BY REV B PER TDR 11426		19 AUG 64

NASA PART NUMBER	CANNON ELECTRICAL PART IDENTIFICATION	FOR USE ON NASA PART
1016126 -1	D-20419-16	1016072
1016126 -2	V-20418-2	1015697

FOR INFORMATION ONLY
CLASS B RELEASE TDR No. 03341 DATE 9/26/63

REPLACED WITH CHANGE BY REV B

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND-1002024 FOR THIS DRAWING.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON	AC SPARK PLUG DIVISION, GMC MILWAUKEE, WISCONSIN	MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
		FRACTIONS DECIMALS ANGLES + + + - - -	ACSP PN	SCREW - LOCK - MECHANISM	
		DO NOT SCALE THIS DRAWING	DRAWN <i>J. Parks</i> 18 SEP 63 CHECKED <i>W. Stahl</i> 18 SEP 63 APPROVAL <i>J. Lewis</i> 9-16-60	SPECIFICATION CONTROL DRAWING	
		MATERIAL	APPROVAL <i>J. G. Limer</i> 9/23/63	CODE IDENT NO.	SIZE
		NEXT ASSY USED ON	NASA APPROVAL <i>B. H. Lusk</i> 9/24/63	B	1016126
		APPLICATION	MIT APPROVAL <i>J. Stahl</i> 9/24/63	SCALE	SHEET 1 of 1
		CONTRACT NAS 9-497			

REQUIREMENTS:

GENERAL:

INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.

SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN MD-1015404, CLASS 3.

INSPECTION AND ACCEPTANCE:

MECHANICAL REQUIREMENTS:

MATERIAL:

COLD ROLLED STEEL

FINISH:

CADMIUM PLATED, YELLOW CHROMATE

DIMENSIONS:

PER DRAWING

MARKING:

PIECESMARKING - PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA PART NUMBER, AND REVISION LETTER.

PACKAGE - INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:

SUPPLIER'S NAME

NASA PART NUMBER AND REVISION LETTER

DATE CODE, OR DATE OF MANUFACTURE

MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

NASA PART NUMBER	CANNON ELECTRICAL PART IDENTIFICATION	FOR USE ON NASA PART
1016126 -1	D-20419-16	1016072
1016126 -2	V-20418-2	1015897

REVISIONS				
SYM	DESCRIPTION	CHG NO.	DATE	APPD.

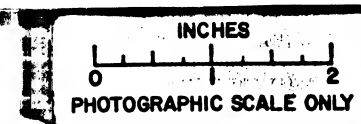
FOR INFORMATION ONLY

CLASS B RELEASE TCR No. 03341 DATE 9/26/63

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND-1002034 FOR THIS DRAWING

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON		AC SPARK PLUG DIVISION, GMC MILWAUKEE, WISCONSIN		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
FRACTIONS DECIMALS ANGLES + — + — + — — — — — — —		DRAWN <i>L. Papp</i> 18 SEP 68 CHECKED <i>W. Dreibl</i> 18 SEP 68 APPROVAL <i>J. Lewis</i> 9-16-68		SCREW - LOCK - MECHANISM	
DO NOT SCALE THIS DRAWING		APPROVAL <i>L. Goldman</i> 9/23/68		SPECIFICATION CONTROL DRAWING	
MATERIAL		NASA APPROVAL <i>K. Michael</i> 9/24/68		CODE IDENT NO.	SIZE B
NEXT ASSY USED ON		MIT APPROVAL <i>L. Walzel</i> 9/26/68		1016126	
APPLICATION		CONTRACT <i>NAS 9-497</i>		SCALE —	SHEET 1 of 1

ML 10778-



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.

B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND-1015404, CLASS (3).

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL: NYLON (ZYTEL 101) PER MIL-P-17091B, TYPE I.

(2) FINISH: NONE.

(3) DIMENSIONS: AS SHOWN.

(4) MARKING:

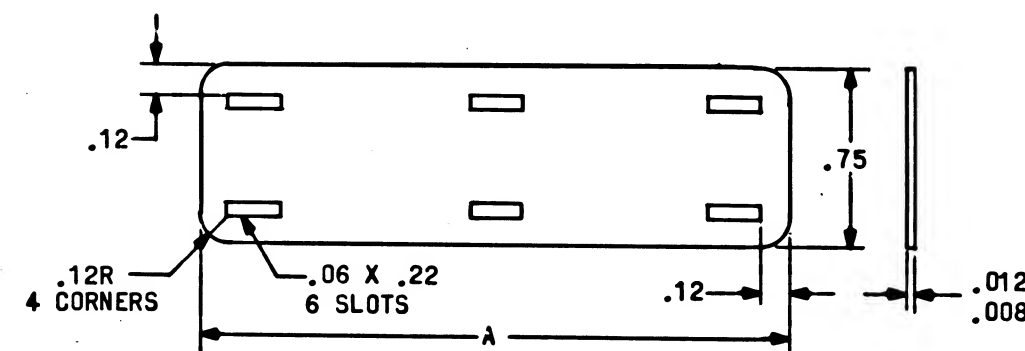
PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION: SUPPLIER'S NAME, NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.

(5) MANUFACTURER'S PART NUMBER, DATE CODE, OR DATE OF MANUFACTURE MAY APPEAR ON THE PART OR PACKAGE.

NASA PART NUMBER	COLOR CODE	A	THOMAS AND BETTS PART NUMBER (REF)
1016128-001	CLEAR	1.50	TC-124
-011	CLEAR	1.25	TC-123
-021	CLEAR	2.00	TC-126
-031	CLEAR	1.75	TC-125
-041	CLEAR	2.50	TC-128

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 03736 DATE 10/8/63



PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS CONTRACT 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>J. R. R. 19 SEP 63</i> CHECKED <i>J. R. R. 20 SEP 63</i> APPROVAL <i>J. R. R. 20 SEP 63</i>		BAND-IDENTIFICATION BLANK	
DO NOT SCALE THIS DRAWING MATERIAL SEE REQUIREMENTS HEAT TREATMENT NONE FINAL FINISH SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING CODE IDENT NO. SIZE C 1016128 SCALE NONE WT	
NEXT ASSY	USED ON	NASA DRAWING NO. SHEET 1 OF 1	
APPLICATION			

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHT, OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

GENERAL:

INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.

SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND-1015404, CLASS (3).

INSPECTION AND ACCEPTANCE:

MECHANICAL REQUIREMENTS:

MATERIAL: NYLON (ZYTEL 101) PER MIL-P-17091B, TYPE I.

FINISH: NONE.

DIMENSIONS: AS SHOWN.

MARKING:

PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE

PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:

SUPPLIER'S NAME, NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.

MANUFACTURER'S PART NUMBER, DATE CODE, OR DATE OF MANUFACTURE MAY APPEAR ON THE PART OR PACKAGE.

NASA PART NUMBER	COLOR CODE	A	THOMAS AND BETTS PART NUMBER (REF)
1016128-001	CLEAR	1.50	TC-124
-011	CLEAR	2.25	TC-123
-021	CLEAR	2.00	TC-126
-031	CLEAR	1.75	TC-125
-041	CLEAR	2.50	TC-128

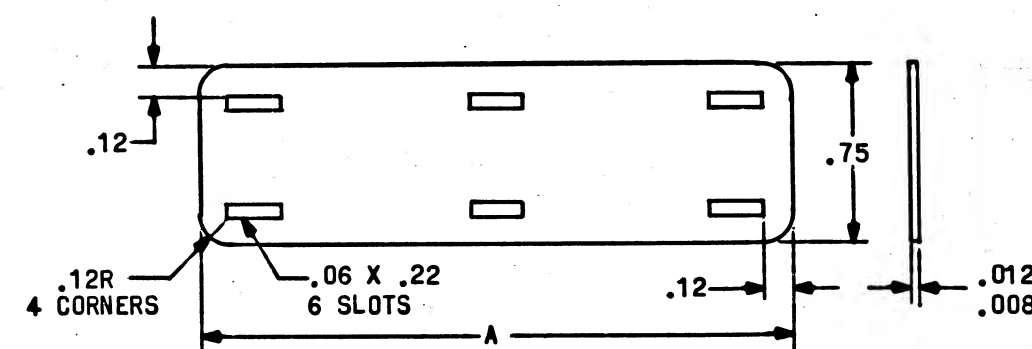
8219101

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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FOR INFORMATION ONLY

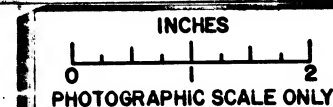
CLASS B RELEASE TDR No. 03736 DATE 10/8/63



PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS DWS. NO. CONTRACT 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>J. Carbo</i> DATE 19SEP63 CHECKED <i>W. J. Rhine</i> 20 SEP 63 APPROVAL <i>W. J. Rhine</i> 10/8/63		BAND-IDENTIFICATION BLANK	
DO NOT SCALE THIS DRAWING		SPECIFICATION CONTROL DRAWING	
MATERIAL SEE REQUIREMENTS		CODE IDENT NO. SIZE C 1016128	
HEAT TREATMENT NONE		NASA DRAWING NO.	
FINAL FINISH SEE REQUIREMENTS		SCALE NONE WT SHEET 1 OF 1	
NEXT ASSY	USED ON	APPLICATION	



REQUIREMENTS:

1. GENERAL:

- 1.
 - A. INTERPRETING DRAWING SYMBOLS, ABBREVIATIONS, AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
 - B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
- 2. INSPECTION AND ACCEPTANCE:
 - A. MECHANICAL REQUIREMENTS:
 - (1) MATERIAL AND FINISH: BRASS, CHROME PLATED
 - (2) DIMENSIONS: SHALL BE AS SHOWN.
 - (3) MARKING:
 - (a) PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
 - (b) PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
 - MANUFACTURER'S NAME
 - NASA PART NUMBER AND REVISION LETTER
 - (c) MANUFACTURER'S PART NUMBER, LOT OR SERIAL NUMBER AND DATE CODE OR DATE OF MANUFACTURE MAY APPEAR ON THE PART OR PACKAGE.

NASA PART NUMBER	BASE DIA.	HEIGHT	MOUNTING HOLES		GEIER & BLUHM PART NO. (REF)
			DIA.	BOLT CIRCLE	
1016129-010	2.75	.69	.136	2.500	2-24000

PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING.

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 03735 DATE 10/8/63

<div style="border: 1px solid black; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin: 0 auto;">A</div> <div style="display: inline-block; vertical-align: middle;"> <h1 style="margin: 0;">REPLACED WITH CHANGE BY REV B</h1> </div>			
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FINI NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS.	MANNED SPACECRAFT CENTER HOUSTON, TEXAS		
DWS. NO. _____ CONTRACT <i>NAS 9-897</i>			
DRAWN <i>J. Korman</i> DATE <i>11 SEP 63</i>	LEVEL, CIRCULAR, MOUNTED		
CHECKED <i>Ed. Fater</i> <i>25 SEP 63</i>			
APPROVAL <i>Ed. Fater</i> <i>26 SEP 63</i>			
APPROVAL <i>L. Gideman</i> <i>10 FEB 63</i>	SPECIFICATION CONTROL DRAWING		
NASA APPROVAL <i>W. J. Rhine</i> <i>8-10-63</i>	CODE IDENT NO.	SIZE	NASA DRAWING NO. 1016129
MIT APPROVAL <i>W. J. Rhine</i> <i>8-10-63</i>	SCALE NONE	WT	SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL AND FINISH:

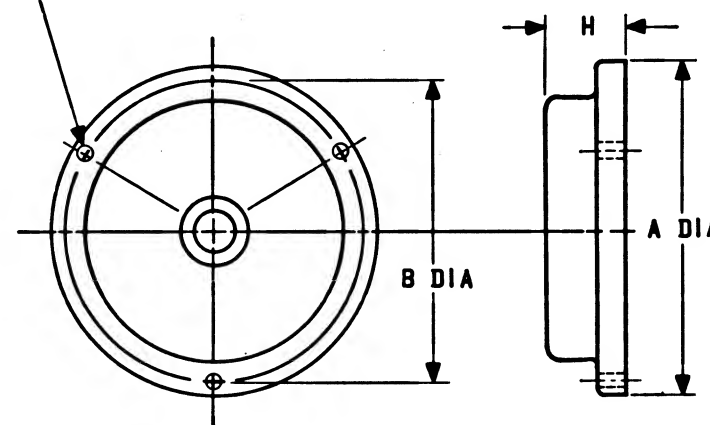
- BASE: BRASS, CHROME PLATED.
- VIAL: GLASS, ETCHED WITH ONE CENTERING CIRCLE, FILLED WITH CLEAR FLUID AND HERMETICALLY SEALED.

(2) DIMENSIONS: SHALL BE AS SHOWN.

(3) MARKING:

- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
 - PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
MANUFACTURER'S NAME
NASA PART NUMBER AND REVISION LETTER
 - MANUFACTURER'S PART NUMBER, LOT OR SERIAL NUMBER AND DATE CODE OR DATE OF MANUFACTURE MAY APPEAR ON THE PART OR PACKAGE.
- (4) SENSITIVITY: SHALL BE AS SHOWN IN TABLE ± 10 PERCENT. UNITS OF MEASUREMENT SHALL BE MINUTES OF ARC FOR EACH 0.1 INCH OF BUBBLE MOVEMENT.

D DIA 3 HOLES
EQUALLY SPACED



FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 03735 DATE 10/8/63

NASA DASH NUMBER	BASE DIA. A	H HEIGHT	MOUNTING HOLES		SENSITIVITY SEE REQ 2.A.(4)	GEIER & BLUMH PART NO.(REF)
			DIA. D	BOLT CIRCLE B		
-010	2.75	.69	.136	2.500	10	2-24000

PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING.

MASTER

ⓑ REPLACES REV A WITH CHANGE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN KOSMATKA DATE SEP 63 CHECKED EO FOSTER 25 SEP 63 APPROVAL ROEDLBRONN 25 SEP 63 APPROVAL L. Goodman 12/1/64		LEVEL, CIRCULAR, MOUNTED	
SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		CODE IDENT NO.	NASA DRAWING NO.
FINAL FINISH SEE REQUIREMENTS		SIZE C	1016129
MIT APPROVAL [Signature]		SCALE NONE	WT
		SHEET 1 OF 1	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON, OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

6219101

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- MATERIAL AND FINISH: BRASS, CHROME PLATED
- DIMENSIONS: SHALL BE AS SHOWN.
- MARKING:
 - PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
 - PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
MANUFACTURER'S NAME
NASA PART NUMBER AND REVISION LETTER
 - MANUFACTURER'S PART NUMBER, LOT OR SERIAL NUMBER AND DATE CODE OR DATE OF MANUFACTURE MAY APPEAR ON THE PART OR PACKAGE.

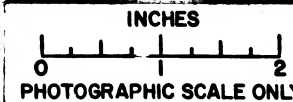
FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 03735 DATE 10/8/63

NASA PART NUMBER	BASE DIA.	HEIGHT	MOUNTING HOLES DIA.	BOLT CIRCLE	GEIER & BLUMH PART NO.(REF)
1016129-010	2.75	.69	.136	2.500	2-24000

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>J. K. K...</i> DATE <i>11/63</i>		LEVEL, CIRCULAR, MOUNTED	
CHECKED <i>Ed. Foster</i> 25 SEP 63		SPECIFICATION CONTROL DRAWING	
APPROVAL <i>L. J. G...</i> 10/8/63		NASA DRAWING NO. 1016129	
NASA APPROVAL <i>W. J. R...</i> 10/8/63		CODE IDENT NO.	SIZE C
MIT APPROVAL <i>W. J. R...</i> 10/8/63		SCALE NONE	WT SHEET 1 OF 1

PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING.



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSES THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- MATERIAL: ALUMINUM (1145-H19 OR 5052-H39), .003 LAMINATIONS, PLASTIC BOND
- DIMENSIONS: AS SHOWN
- MARKING:
 - PIECEMARKING - PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA PART NUMBER, DASH NUMBER AND REVISION LETTER.
 - PACKAGE - INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
 - SUPPLIER'S NAME
 - NASA PART NUMBER, DASH NUMBER, AND REVISION LETTER
 - DATE CODE, OR DATE OF MANUFACTURE
 - MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE

- APPLICATION DATA (FOR REFERENCE): LAMINATIONS TO BE EDGE-BONDED ON THREE SIDES AS SHOWN.

NASA PART NUMBER	THICKNESS
1016130-001	.048
-002	.126

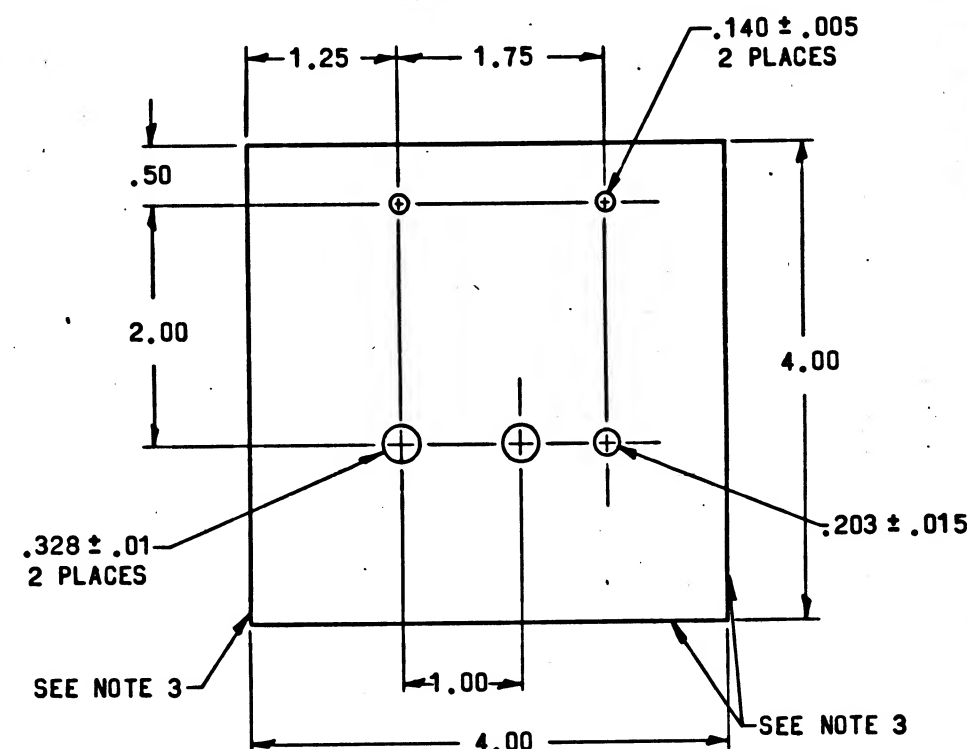
PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

0019101

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL

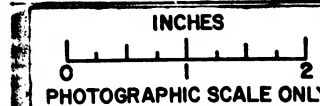
FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04291 DATE 10/30/67



NOTES

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS DWS NO. 437 CONTRACT 437		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>T. Korman</i> DATE 20 SEP 63 CHECKED <i>C. Foster</i> 26 SEP 63 APPROVAL <i>James</i> 26 SEP 63 APPROVAL <i>W. G. Gorman</i> 10/28/63		SHIM, SLIDE LOCATING	
MATERIAL SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		NASA APPROVAL <i>W. G. Gorman</i> 11/14/63	CODE IDENT NO. SIZE C
FINAL FINISH NONE		MIT APPROVAL <i>W. G. Gorman</i> 30 Oct 63	NASA DRAWING NO. 1016130
NEXT ASSY	USED ON	SCALE	WT
APPLICATION		SHEET 1 OF 1	



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, UNIFORMED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- THESE CONNECTORS SHALL CONFORM TO THE REQUIREMENTS OF MIL-C-26482 EXCEPT END INSERT ARRANGEMENT AND WITH THE PARTICULAR REQUIREMENTS LISTED BELOW AS REFERENCE INFORMATION.
- SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN MIL-Q-9858.
- UNITS SHALL BE CAPABLE OF MEETING ALL QUALIFICATION REQUIREMENTS SPECIFIED IN ND 1002052 UNLESS MODIFIED OR AMENDED BY THE INSPECTION AND ACCEPTANCE REQUIREMENTS LISTED BELOW.
- CONTACTS SUPPLIED SEPARATELY IN A PLIOFILM BAG WITH 10% SPARES.

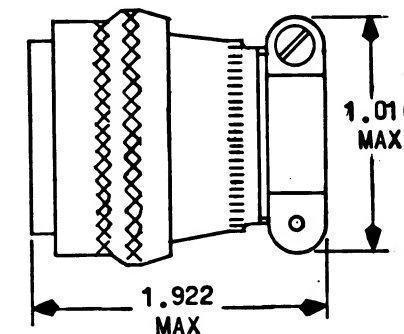
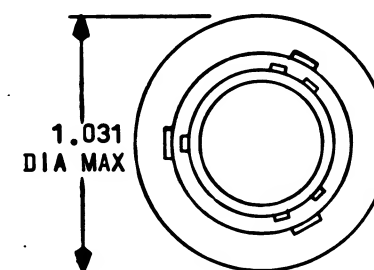
2. INSPECTION AND ACCEPTANCE:

- ELECTRICAL REQUIREMENTS:
 - ELECTRICAL CHARACTERISTICS (IN ACCORDANCE WITH THE MILITARY SPECIFICATIONS):
 - DIELECTRIC WITHSTANDING VOLTAGE: 1500 VRMS.
 - INSULATION RESISTANCE: 5000 MEGOHMS MINIMUM (500 VDC)
- MECHANICAL REQUIREMENTS:
 - MARKING: UNITS SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE NASA PART NUMBER AND REVISION LETTER, AND THE MANUFACTURER'S NAME AND/OR SYMBOL. THE MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE. EACH CONTAINER SHALL INCLUDE THE NASA DRAWING AND DASH NUMBER PLUS THE REVISION LETTER.

3. DESIGN REQUIREMENTS:

- OPERATING LIFE: SEE RELIABILITY NOTE.
- STORAGE LIFE: 1 YEAR WITHOUT GROMMET DETERIORATION.
- CONSTRUCTION:
 - TYPE CONNECTOR: ENVIRONMENT SEALED BY A GROMMET AND INSERT WITH A STRAIN RELIEF CLAMP, SOLID SHELL AND POSITIVE INSERT RETENTION.
 - TYPE CONTACT: CRIMP CONTACTS SOCKET TYPE
 - NUMBER AND SIZE OF CONTACTS: SEE TABLE
 - COUPLING: BAYONET
 - SHELL: ALUMINUM ALLOY, PER QQ-A-591, FINISH PER QQ-P-416, TYPE II CLASS C. OLIVE DRAB COLOR.
- RELIABILITY: CONNECTORS SHALL BE CAPABLE OF WITHSTANDING 500 CYCLES OF ENGAGEMENT AND DISENGAGEMENT WITHOUT ELECTRICAL OR MECHANICAL FAILURE.
- ELECTRICAL:
 - INSULATION RESISTANCE (+125°C): 50 MEGOHMS MINIMUM. (500 VDC)
 - CONTACT RESISTANCE: 50 MILLIVOLTS MAXIMUM AT RATED CURRENT.
 - CONTACT CURRENT RATING: 7.5 AMPERES.
 - VOLTAGE RATING: 700 VDC AND 500 VRMS
 - INSERT ARRANGEMENT: PER TABLE.

NASA PART NUMBER	INSERT ROTATION (DEGREES)	NO. OF CONTACTS	STANDARD INSERT ARRANGEMENT	MANUFACTURER'S PART IDENTIFICATION
1016134- 80	0	8 NO.20AWG		PT06SE-12-8S (SR)
- 81	90			-8SW
- 82	112			-8SX
- 83	203			-8SY
- 84	292			-8SZ




PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

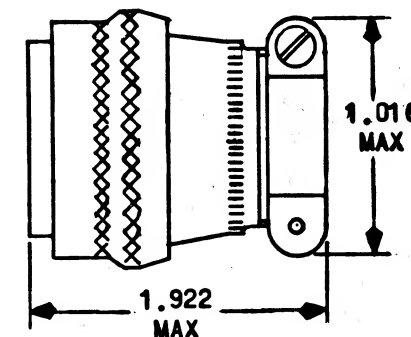
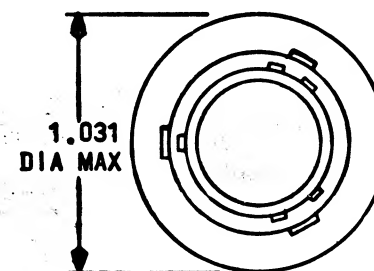
		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± ± ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		NONE
NEXT ASSY	USED ON	
		APPLICATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
		LIST OF MATERIALS	
	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
	DRAWN <i>[Signature]</i> DATE 1 NOV 63 CHECKED <i>[Signature]</i> 1 NOV 63 APPROVAL <i>[Signature]</i> 1 NOV 63	CONNECTOR PLUG, ELECTRICAL SPECIFICATION CONTROL DRAWING	
	NASA APPROVAL <i>[Signature]</i> 11/14/63	CODE IDENT NO. SIZE C	NASA DRAWING NO. 1016134
	MIT APPROVAL <i>[Signature]</i> 11/14/63	SCALE NONE WT	SHEET 1 OF 1

REQUIREMENTS:

- FOR INFORMATION ONLY**

NASA PART NUMBER	INSERT ROTATION (DEGREES)	NO. OF CONTACTS	STANDARD INSERT ARRANGEMENT	MANUFACTURER'S PART IDENTIFICATION
1016134- 60	0	8 NO.12AWG		PT06CE-12-8S (SR)
- 81	90			-8SW
- 82	112			-8SX
- 83	203			-8SY
- 84	292			-8SZ



PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING.

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED		
DIMENSIONS ARE IN INCHES		
TOLERANCES ON		
FRACTIONS	DECIMALS	ANGLES
± —	± —	± —
DO NOT SCALE THIS DRAWING		
MATERIAL		
SEE REQUIREMENTS		
HEAT TREATMENT		
NONE		
FINAL FINISH		
NONE		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION		FINI NO
LIST OF MATERIALS				
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS DWG NO. <u>CONTRACT NAS 9-497</u>		MANNED SPACECRAFT CENTER HOUSTON, TEXAS		
DRAWN <u>D. D. Holt</u> DATE <u>1 NOV 63</u> CHECKED <u>Ed Foster</u> <u>1 NOV 63</u> J. Lewis APPROVAL <u>1 NOV 63</u> APPROVAL <u>J. Goldman 11/15/63</u>		CONNECTOR PLUG, ELECTRICAL SPECIFICATION CONTROL DRAWING		
NASA APPROVAL <u>K. L. Lusk 11/15/63</u>		CODE IDENT NO.	SIZE C	NASA DRAWING NO. 1016134
MIT APPROVAL <u>L. Nafel 11/19/63</u>		SCALE NONE	WT	SHEET 1 OF 1

INCHES

0 1 2

PHOTOGRAPHIC SCALE ONLY

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A SPECIFICALLY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT, THE GOVERNMENT OF ANY STATE, OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING THE RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREIN.

1

2

3

4

9E19101

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REPLACED WITH CHANGE BY REV. "B" PER EYC 19/858 REVISED PER TDR 05312	19/10/63	SH KLN

- REQUIREMENTS:
1. GENERAL:
 - A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
 - B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
 2. INSPECTION AND ACCEPTANCE:
 - A. MECHANICAL REQUIREMENTS:
 - (1) MARKING:
 - (a) PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
 - (b) PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME.
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
DATE CODE, OR DATE OF MANUFACTURE.
 - (c) MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

NASA PART NUMBER	VENDOR PART NUMBER	DIAL SIZE	CONNECTION	RANGE
1016136-001	P644U	2-1/2	1/8 CBM	-30" TO 300 PSIG
1016136-002	P644U	2-1/2	1/8 CBM	0 TO 60 PSIG
1016136-003	P644U	2-1/2	1/8 CBM	0 TO 100 PSIG
1016136-004	P644U	2-1/2	1/8 CBM	0 TO 400 PSIG

FOR INFORMATION ONLY

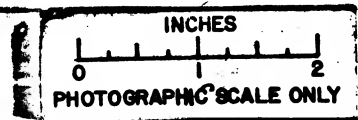
CLASS B RELEASE TDR No. 04291 DATE 10/2/63

(A) REPLACED WITH CHANGE BY REV "B"

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

MASTER

QTY REQD		PART OR IDENTIFYING NO.		NOMENCLATURE OR DESCRIPTION		FIND NO.	
LIST OF MATERIALS							
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS 02139 CONTRACT				MANNED SPACECRAFT CENTER HOUSTON, TEXAS			
DRAWN <i>Bill Johnson</i> DATE 10/1/63 CHECKED <i>J. Molge</i> 10/1/63 APPROVAL <i>J. U. Wynn</i> 3 OCT 63 APPROVAL <i>Johnson</i> 10/2/63				GAUGE - PRESSURE			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ± DO NOT SCALE THIS DRAWING MATERIAL SEE REQUIREMENTS				SPECIFICATION CONTROL DRAWING			
HEAT TREATMENT NONE				CODE IDENT NO. SIZE		NASA DRAWING NO.	
FINAL FINISH NONE				C		1016136	
NEXT ASSY		USED ON		SCALE NONE WT		SHEET 1 OF 1	
APPLICATION							



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER. THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MARKING:

- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
DATE CODE, OR DATE OF MANUFACTURE.
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

(2) ACCURACY:

- MIDDLE HALF OF SCALE 2% OF SCALE RANGE, REMAINDER 3%

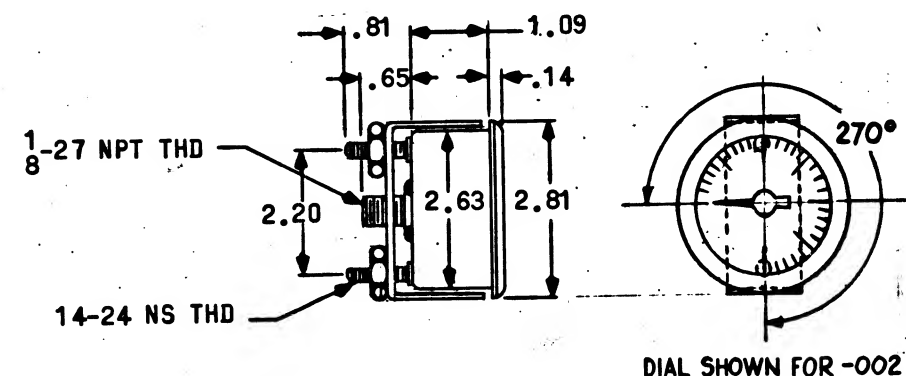
B 1016136

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	REPLACES REV. A WITH CHANGE PER MXC 101968 REVISED PER TDR 05312	19 NOV 63 12/63	SH R2W W.K.

(B) REPLACES REV. A WITH CHANGE

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04291 DATE 0/20/63



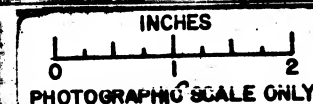
NASA PART NUMBER	VENDOR PART NUMBER	DIAL SIZE	CONNECTION	RANGE	DIAL MARKING		
					FIGURE INTERVAL	SMALLEST INTERVAL	
-001	P644U	2-1/2	1/8 CBM	-30" HG TO 300 PSIG	30"	50 PSIG	10" 5 PSIG
-002	P644U	2-1/2	1/8 CBM	0 TO 60 PSIG	10 PSIG		2 PSIG
-003	P644U	2-1/2	1/8 CBM	0 TO 100 PSIG	10		2
-004	P644U	2-1/2	1/8 CBM	0 TO 400 PSIG	50		10

PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING.

MASTER

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON	
FRACTIONS	DECIMALS ANGLES
±	±.02 ±
DO NOT SCALE THIS DRAWING	
MATERIAL	
SEE REQUIREMENTS	
HEAT TREATMENT	
NONE	
FINAL FINISH	
NONE	
NEXT ASSY	USED ON
APPLICATION	

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS CONTRACT 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN R.W. TURNER DATE 30 SEP 63 CHECKED V. MOLYE 1 OCT 63 APPROVAL J.Y. WEAN 3 OCT 63 APPROVAL L. Gelman 12/19/63		GAUGE - PRESSURE	
NASA APPROVAL [Signature]		SPECIFICATION CONTROL DRAWING	
MIT APPROVAL [Signature]		CODE IDENT NO.	NASA DRAWING NO.
		C	1016136
		SCALE NONE	WT
		SHEET 1 OF 1	



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL, ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MARKING:

- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:

SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER, AND
REVISION LETTER.

DATE CODE, OR DATE OF MANUFACTURE.

- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

(2) ACCURACY:

- MIDDLE HALF OF SCALE 2% OF SCALE RANGE, REMAINDER 3%

B 1016136

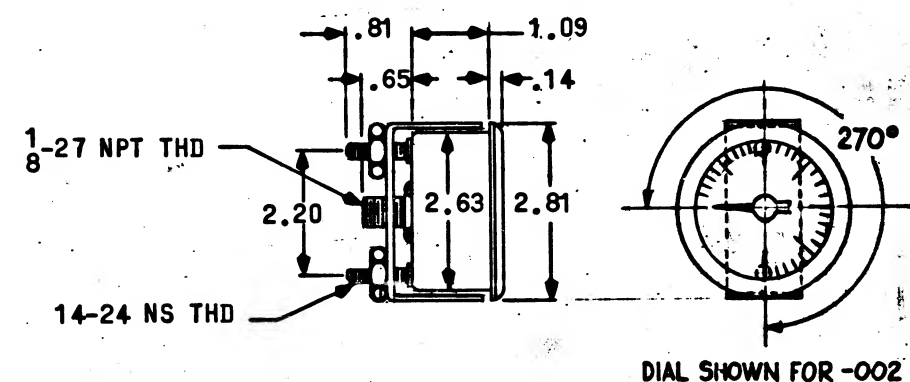
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	REPLACES REV. A WITH CHANGE PER NXC 191968 REVISED PER TDR 05312	19 NOV 63	SN R2W
C	REPLACED WITH CHANGE BY REV. D PER CM 192957 REVISED PER TDR 06988	22 JAN 64	WIK

ⓑ REPLACES REV "A" WITH CHANGE

ⓒ REPLACED WITH CHANGE BY REV "D"

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04291 DATE 2/20/63



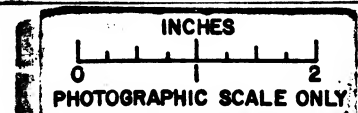
NASA PART NUMBER	VENDOR PART NUMBER	DIAL SIZE	CONNECTION	RANGE	DIAL MARKING			
					FIGURE INTERVAL	SMALLEST INTERVAL		
-001	P644U	2-1/2	1/8 CBM	-30" TO 300 PSIG	30"	50 PSIG	10"	5 PSIG
-002	P644U	2-1/2	1/8 CBM	0 TO 60 PSIG	10 PSIG		2 PSIG	
-003	P644U	2-1/2	1/8 CBM	0 TO 100 PSIG	10		2	
-004	P644U	2-1/2	1/8 CBM	0 TO 400 PSIG	50		10	

PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING.

MASTER

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON	
FRACTIONS	DECIMALS ANGLES
±	±.02 ±
DO NOT SCALE THIS DRAWING	
MATERIAL	
SEE REQUIREMENTS	
HEAT TREATMENT	
NONE	
FINAL FINISH	
NONE	
NEXT ASSY	USED ON
APPLICATION	

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. NAS CONTRACT 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN R.W. TURNER DATE 30 SEP 63		GAUGE - PRESSURE	
CHECKED V. MOLYE 1 OCT 63		SPECIFICATION CONTROL DRAWING	
APPROVAL T.V. WEARN 3 OCT 63		NASA DRAWING NO.	
APPROVAL L. Gelman 12/19/63		1016136	
NASA APPROVAL [Signature]		CODE IDENT NO.	SIZE
MIT APPROVAL [Signature]		C	1
		SCALE NONE	WT
		SHEET 1 OF 1	



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFERRING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

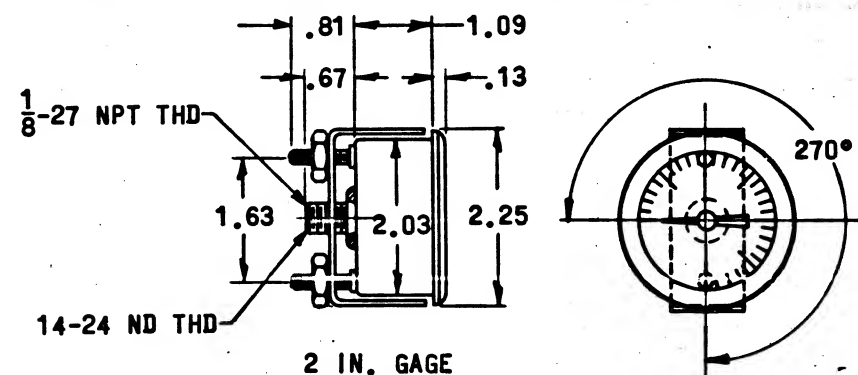
2		1	
Q		9E19101	
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
D	REPLACES REV. C WITH CHANGE PER CM-192957 REVISED PER TDR 06988	23 JAN 64 3/12/64	R MEM

REQUIREMENTS:

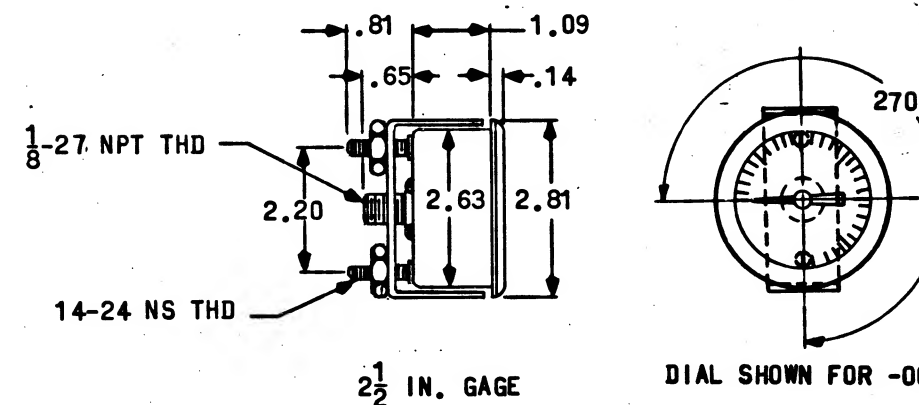
1. GENERAL:
- A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
2. INSPECTION AND ACCEPTANCE:
- A. MECHANICAL REQUIREMENTS:
- (1) MARKING:
- (a) PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
- (b) PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
- SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
DATE CODE, OR DATE OF MANUFACTURE
- (c) MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.
- (2) ACCURACY: MIDDLE HALF OF SCALE 2% OF SCALE RANGE, REMAINDER 3%.

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04291 DATE 30 OCT 63



DIAL SHOWN FOR -006



DIAL SHOWN FOR -002

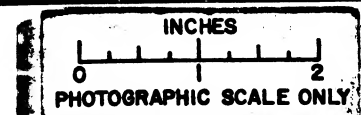
NASA PART NUMBER	MANUFACTURER'S PART NUMBER					DIAL MARKING	
	DIAL SIZE	PRESSURE RANGE	CONNECTION	RING	FIGURE	FIGURE INTERVAL	SMALLEST INTERVAL
1016136 -001	2-1/2	-30"HG TO 300 PSIG	1/8 CBM	CHROME	P644U	30" 50 PSIG	10" 5 PSIG
-002	2-1/2	0 TO 60 PSIG		CHROME		10 PSIG	2 PSIG
-003	2-1/2	0 TO 100 PSIG		CHROME		10 PSIG	2 PSIG
-004	2-1/2	0 TO 400 PSIG		CHROME		50 PSIG	10 PSIG
-005	2	0 TO 60 PSIG		BLACK		10 PSIG	2 PSIG
-006	2	0 TO 100 PSIG		BLACK		10 PSIG	2 PSIG

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

MASTER

REPLACES REV. C WITH CHANGE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. N95 9- DWS. NO. CONTRACT 497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN R.M. TURNER DATE 30 SEPT 63 CHECKED V. HOLYE 1 OCT 63 APPROVAL J.V. WEAR 3 OCT 63 APPROVAL L. Gelman 3/12/64		GAUGE - PRESSURE	
SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		NASA DRAWING NO.	
FINAL FINISH NONE		1016136	
NASA APPROVAL W.D. Rhee 12-24	CODE IDENT NO.	SIZE C	
MIT APPROVAL W. E. Rhee 12-24	SCALE NONE	WT	SHEET 1 OF 1



REVISIONS			
SYM	DESCRIPTION	DATE	APPROVA
A	REVISED AND UPGRADED TO CLASS A PER TDRR 18159	9 APR 65	JWP E

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN MIL-Q-9858.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MARKING:

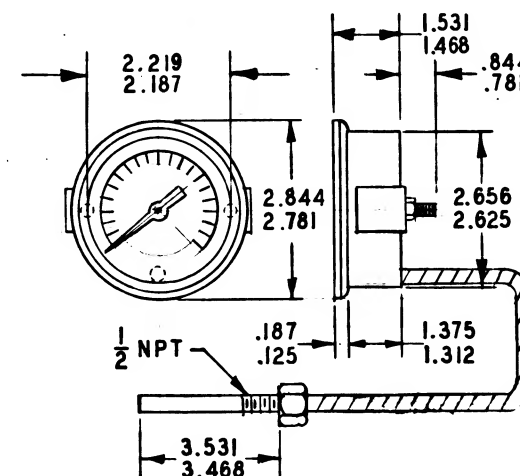
- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME.
NASA DRAWING NUMBER, DASH NUMBER.

DATE CODE, OR DATE OF MANUFACTURE.

- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

3. DESIGN:

- ACCURACY- 1% THROUGH THE RANGE OF 20°F TO 115°F.



NASA PART NUMBER	VENDOR P/N	DIAL SIZE	RANGE	ACT. MEDIA	CONNECTION	CAPILLARY LENGTH	RING
1016137-001	MINIATURE	2-1/2	0-150°F	MERCURY	SEPARABLE SOCKET	5'	BLACK
-002							CHROME

PROCURE ONLY FROM APPROVED SOURCES LISTED ON CONTRACTOR'S ACCEPTABLE SUPPLIERS LIST.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		= ± ± °
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
NEXT ASSY	USED ON	FINAL FINISH
		NONE
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS 02139-497 DWG NO. CONTRA T		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>E. W. L...</i> DATE 30 SEP 63 CHECKED <i>P. Molye</i> 1 OCT 63 APPROVAL <i>J. U. W...</i> 3 OCT 63 APPROVAL <i>J. G...</i> 10/18/63		GAUGE - TEMPERATURE, SEPARABLE SOCKET	
NASA APPROVAL <i>W. H. ...</i> 10/27/63 MIT APPROVAL <i>W. H. ...</i> 30 OCT 63		SPECIFICATION CONTROL DRAWING	
		CODE IDENT NO.	NASA DRAWING NO.
		C	1016137
		SCALE NONE	WT
		SHEET 1 OF 1	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREOF.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MARKING:

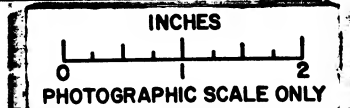
- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME.
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
DATE CODE, OR DATE OF MANUFACTURE.
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

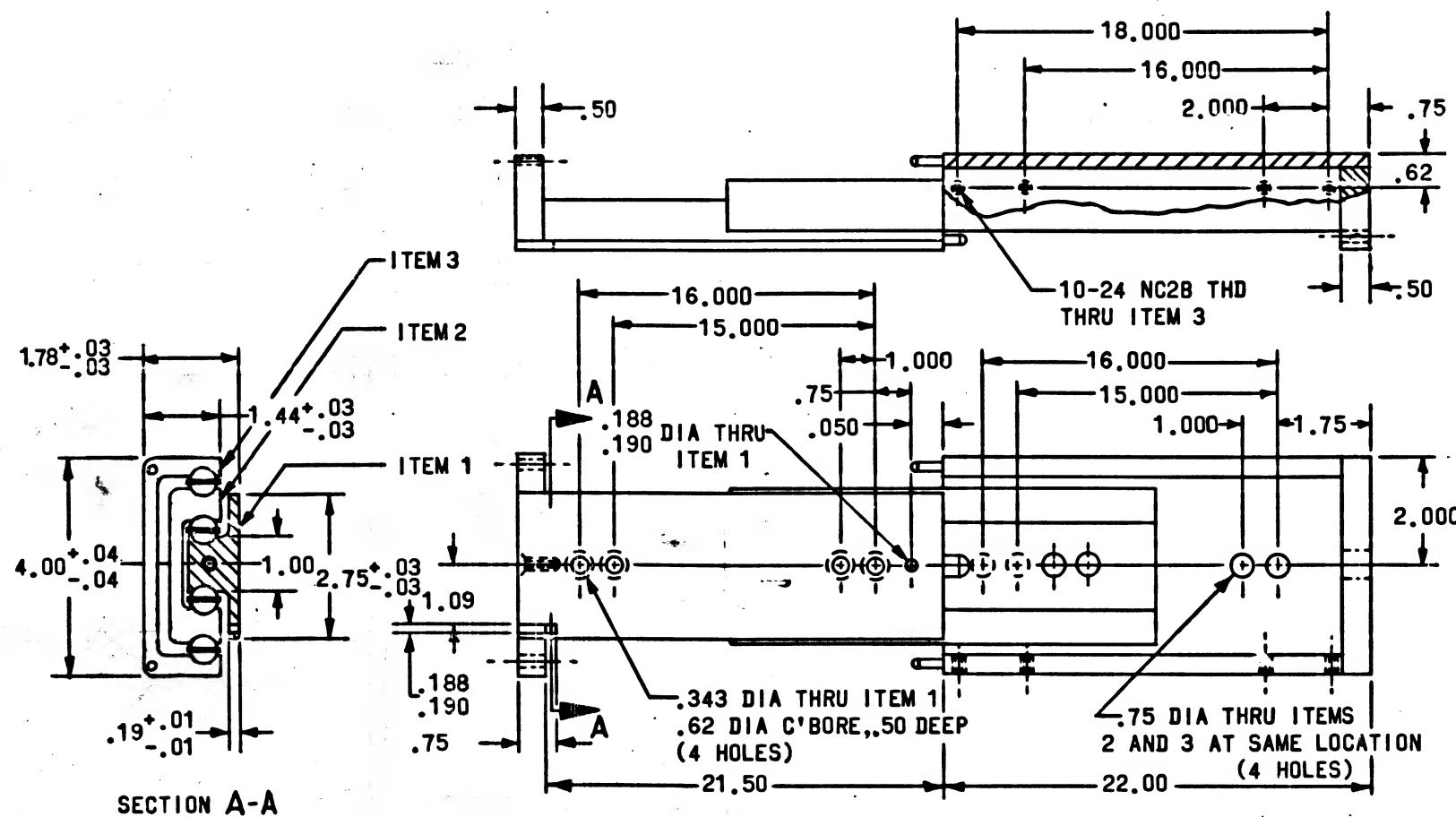
NASA PART NUMBER	VENDOR P/N	DIAL SIZE	RANGE	ACT. MEDIA	CONNECTION	CAPILLARY LENGTH
1016137-001	MINIATURE	2-1/2	0-150°C	MERCURY	SEPARABLE SOCKET	5'

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± ± ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		NONE
NEXT ASSY	USED ON	
		APPLICATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS 02139-497 CONTRACT		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>L. W. Jenson</i> DATE 30 SEP 63 CHECKED <i>P. M. O'Leary</i> 1 OCT 63 APPROVAL <i>J. G. Wilson</i> 3 OCT 63 APPROVAL <i>L. J. Jenson</i> 10/2/63		GAUGE - TEMPERATURE, SEPARABLE SOCKET	
NASA APPROVAL <i>L. J. Jenson</i> 10/2/63 MIT APPROVAL <i>W. K. Jenson</i> 30 OCT 63		SPECIFICATION CONTROL DRAWING	
CODE IDENT NO.		SIZE C	NASA DRAWING NO. 1016137
SCALE NONE		WT	SHEET 1 OF 1





FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04291 DATE 10/30/83

TABLE I

NASA PART NUMBER	MANUFACTURER'S TYPE DESIGNATION	R.H. OR L.H. SECTION	MAX LOAD PER PAIR
1016138-001	830004-R	RIGHT HAND	420 LBS
1016138-002	830004-L	LEFT HAND	

RIGHT HAND (R.H.) SHOWN
LEFT HAND (L.H.) OPPOSITE
(LOCKS NOT SHOWN)

SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	

PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING.

MASTER

		UNLESS OTHERWISE SPECIFIED
		DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		\pm $\pm .01$ \pm
		$\pm .005$
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
NEXT ASSY	USED ON	FINAL FINISH
APPLICATION		SEE REQUIREMENTS

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION		FINI NO.
LIST OF MATERIALS				
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS DWG NO. CONTRACT		MANNED SPACECRAFT CENTER HOUSTON, TEXAS		
DRAWN <u>Egane</u> DATE <u>10/27/63</u> CHECKED <u>M. Manning</u> <u>7 OCT 63</u> APPROVAL <u>H. Kane</u> <u>8 OCT 63</u> APPROVAL <u>J. Gellman</u> <u>10/28/63</u>		SLIDE ASSEMBLY TYPE 83		
SPECIFICATION CONTROL DRAWING				
NASA APPROVAL <u>Attended</u> <u>10/31/63</u>	CODE IDENT NO.	SIZE C	NASA DRAWING NO. 1016138	
MIT APPROVAL <u>W. L. G. Jr</u> <u>30 Oct 63</u>	SCALE	WT	SHEET 1	OF 2

INCHES

0 1 2

PHOTOGRAPHIC SCALE ONLY

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

- SLIDE CHANNELS TO BE ALUMINUM ALLOY 2014-T6 PER QQ-A-261
- COMPONENT PARTS TO BE 302 SST PER MIL-S-5059A OR 303 SST PER MIL-S-7720
- BALLS TO BE 440-C SST PER QQ-S-763

(2) FINISH:

- ANODIZE PER MIL-A-8625A, TYPE II, NON-DYED
- SST PARTS TO BE PASSIVATED PER MIL-S-5002

(3) DIMENSIONS: AS SHOWN

- GENERAL: SLIDE TO BE PROVIDED WITH SHOCK BLOCKS

(4) MARKING:

- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION: SUPPLIER'S NAME, NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER, DATE CODE, OR DATE OF MANUFACTURE.
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

8E19101

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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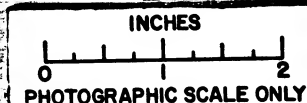
FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 101291 DATE 10/24/63

MASTER

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		
TOLERANCES ON		
FRACTIONS	DECIMALS	ANGLES
±	±	±
DO NOT SCALE THIS DRAWING		
MATERIAL		
HEAT TREATMENT		
FINAL FINISH		
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS.		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <u>Splane</u> DATE <u>10 OCT 63</u>		SLIDE ASSEMBLY TYPE 83	
CHECKED <u>A. MANNING</u> 7 OCT 63		SPECIFICATION CONTROL DRAWING	
APPROVAL <u>A. MANNING</u> 8 OCT 63		NASA DRAWING NO. 1016138	
APPROVAL <u>[Signature]</u> 11/1/63		CODE IDENT NO.	SIZE
NASA APPROVAL <u>[Signature]</u> 11/1/63		C	C
MIT APPROVAL <u>[Signature]</u> 30 Oct 63		SCALE	WT
			SHEET 2 OF 2



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

4321

6E19101

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED & UPGRADED TO CLASS A PER TDRR 16 4-11	19 FEB 65	J J J E F

REQUIREMENTS:

GENERAL:

INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.

SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

INSPECTION AND ACCEPTANCE:

MECHANICAL REQUIREMENTS:

MATERIAL: NYLON (ZYTEL 101) PER MIL-T-17091.

FINISH: NONE

DIMENSIONS: IN TABLE

MARKING:

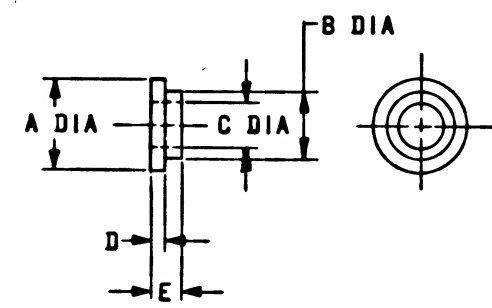
PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:

SUPPLIER'S NAME

NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.

DATE CODE, OR DATE OF MANUFACTURE

MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.



NASA PART NUMBER	A	B	C	D	E
1016139-008	.39	.234 .229	.171	.047 .031	.062 .047
1016139-010	.41	.308 .303	.200	.039 .023	.070 .054
1016139-011	.66	.555 .550	.484	.039 .023	.070 .054

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	MIT INSTRUMENTATION LAB CAMBRIDGE MASS CONTRACT 497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
		TOLERANCES ON FRACTIONS DECIMAL ANGLES	DRAWN WEISSERT DATE 24 SEP 63		WASHER, SHOULDER (NYLON)	
		± .005 ±	CHECKED C. Wilson 24 SEP 63		SPECIFICATION CONTROL DRAWING	
		± .02	APPROVAL C. J. Gorman 10-8-63			
		DO NOT SCALE THIS DRAWING	NASA APPROVAL W. J. Rhine 10-1-63		CODE IDENT NO.	NASA DRAWING NO.
		MATERIAL	MIT APPROVAL W. J. Rhine 10-1-63		SIZE C	1016139
		SEE REQUIREMENTS			SCALE NONE	WT
		HEAT TREATMENT NONE			SHEET 1 OF 1	
		FINAL FINISH NONE				
NEXT ASSY	USED ON	APPLICATION				

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFIRMING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREOF.

6E19101		REVISIONS	
SYM	DESCRIPTION	DATE	APPROVAL

REQUIREMENTS:

GENERAL:

INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

INSPECTION AND ACCEPTANCE:

MECHANICAL REQUIREMENTS:

MATERIAL: NYLON (ZYTEL 101) PER MIL-T-17091.
FINISH: NONE
DIMENSIONS: IN TABLE
MARKING:

PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:

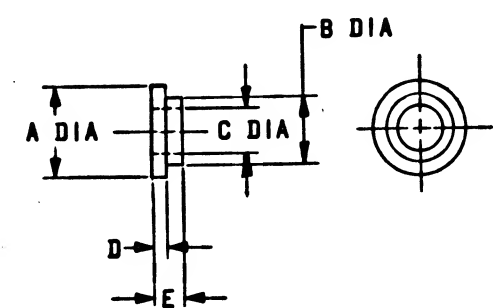
SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.

DATE CODE, OR DATE OF MANUFACTURE
MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 03735 DATE 10/8/63

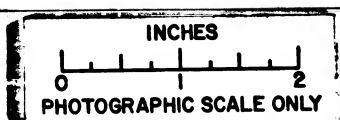
NASA PART NUMBER	A	B	C	D	E
1016139-008	.39	.234 .229	.171	.047 .031	.062 .047



PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS CONTRACT 497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN WEISSERT DATE 24-SEP-63 CHECKED C. Wilson DATE 24-SEP-63 APPROVAL C. Gelman 10-8-63		WASHER, SHOULDER (NYLON)	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± .005 ± .02 DO NOT SCALE THIS DRAWING MATERIAL SEE REQUIREMENTS HEAT TREATMENT NONE FINAL FINISH NONE		SPECIFICATION CONTROL DRAWING	
NEXT ASSY	USED ON	NASA APPROVAL W. J. Rhine 10-8-63 MIT APPROVAL W. J. Rhine 10-8-63	CODE IDENT NO. SIZE C SCALE NONE WT SHEET 1 OF 1



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REQUIREMENTS:

1. GENERAL:

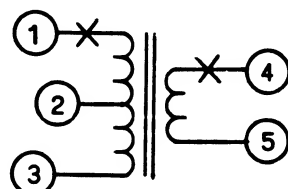
- GENERAL ELECTRIC PART NUMBER 9T34Y1024
- TRANSFORMER DESIGN PART NUMBER TD-795.
- SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
- DESIGN TO BE IN CONFORMANCE WITH SPECIFICATION MIL-T-27.
- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.

2. INSPECTION AND ACCEPTANCE:

- UNIT SHALL MEET ALL REQUIREMENTS OF TABLE I.
- COLOR: UNIT SHALL BE FINISHED WITH COLOR 514 OF ANA BULLETIN 157 (INSTRUMENT BLACK).
- MARKING: MARK PERMANENTLY AND LEGIBLY WITH THE NASA DRAWING NUMBER AND REVISION LETTER PLUS ALL MARKING REQUIREMENTS OF MIL-T-27. THE MANUFACTURER'S PART NUMBER MAY APPEAR ON PART AND PACKAGE.

3. DESIGN REQUIREMENTS:

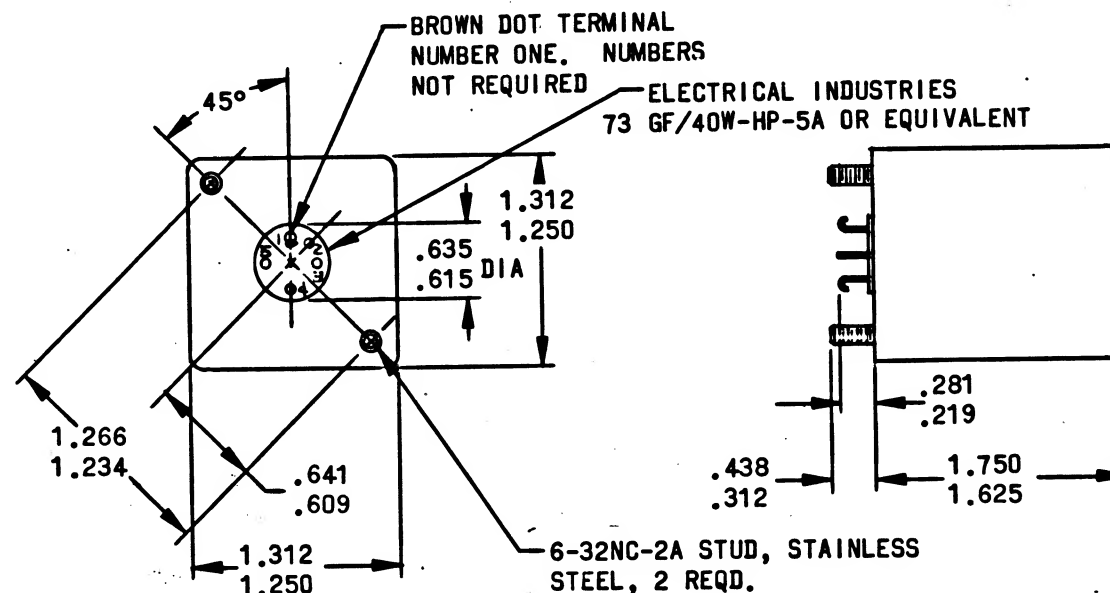
- THE UNIT SHALL MEET ALL REQUIREMENTS OF MIL-T-27 FOR GRADE 4, CLASS R, LIFE EXPECTANCY X, IN AN AMBIENT TEMPERATURE OF 65°C EXCEPT PARAGRAPH 3.1 AND LIFE TEST UNDER GROUP C INSPECTION TESTS WHICH SHALL BE WAIVED.
- ALTITUDE: 10,000 FEET OPERATING, 50,000 FEET NON-OPERATING
- AMBIENT OPERATING TEMPERATURE RANGE: 0°C TO +65°C
- SOLDER USED FOR ELECTRICAL CONNECTIONS SHALL BE COMPOSITION SN60 PER QQ-S-571C.
- DC UNBALANCE IN PRIMARY: 25 MA MAXIMUM.
- MAXIMUM WORKING VOLTAGE: 175 VOLTS INSTANTANEOUS.
- UNIT SHALL BE LAYER WOUND (A BOBBIN MAY BE USED) WITH HEAVY VINYL ACETAL RESIN OR EQUIVALENT.
- V(1-2) AND V(2-3) ARE TO BE APPLIED ALTERNATELY (CLASS B PUSH-PULL) FROM 28V DC SOURCE.
- REGULATION: 16% MAXIMUM AT 25°C.
- PEAK DC PRIMARY CURRENT: 250 MA



SCHEMATIC DIAGRAM
VOLTAGES AND CURRENT
ARE RMS VALUES UNLESS
OTHERWISE NOTED

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 64291 DATE 10/30/63



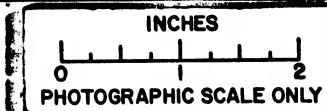
SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	

PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING.

MASTER

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
TOLERANCES ON	
FRACTIONS DECIMALS ANGLES	
± ± ±	± 2°
DO NOT SCALE THIS DRAWING	
MATERIAL	
SEE REQUIREMENTS	
HEAT TREATMENT	NONE
FINAL FINISH	NONE
NEXT ASSY	USED ON
APPLICATION	

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS CONTRACT 9-497 DATE 24 SEP 63		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN [Signature] CHECKED [Signature] APPROVAL [Signature] DATE 27 SEP 63		TRANSFORMER, POWER (56CT-56 VOLTS, 800 CPS, 4 VA) SPECIFICATION CONTROL DRAWING	
NASA APPROVAL [Signature] MIT APPROVAL [Signature]		CODE IDENT NO. C 1016140	NASA DRAWING NO.
SCALE NONE		WT	SHEET 1 OF 2



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE USER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

0719101

REVISIONS

SYM DESCRIPTION DATE APPROVAL

TABLE I
INSPECTION TESTS

NUMBERS IN PARAGRAPH COLUMN REFER TO PARAGRAPH NUMBERS IN SPECIFICATION MIL-T-27	
PARAGRAPH	
4.7.3.2.1	SEALING
4.7.5	DIELECTRIC STRENGTH: APPLY 500 VOLTS (RMS) BETWEEN WINDINGS AND BETWEEN WINDINGS AND CASE.
4.7.6	INDUCED VOLTAGE: APPLY 112 VOLTS, 1600 CPS TO TERMINAL 1 AND 3, SECONDARY OPEN.
4.7.7	INSULATION RESISTANCE: 10,000 MEGOHMS MINIMUM AT 25°C.
4.7.9.4	OPEN CIRCUIT INDUCTANCE: SHALL BE 1.5 HENRIES MINIMUM (1-3) WITH 28 VOLTS, 800 CPS 25 MADG (1-3)
4.7.9.14	POLARITY: TERMINALS 1 AND 4 SHALL BE OF LIKE POLARITY.
4.7.9.17	NO LOAD VOLTAGE RATIO: WITH AN INPUT (1-3) OF 56 VOLTS, 800 CPS, THE NO LOAD OUTPUT VOLTAGE RATIOS SHALL BE: $\frac{V(1-3)}{V(4-5)} = 1 : 1 \pm 3\%$; $\frac{V(1-2)}{V(2-3)} = 1 : 1 \pm 1\%$
4.7.10	TEMPERATURE RISE: SHALL NOT EXCEED 40°C WITH 613 OHM LOAD (4-5) AND RATED (28V DC APPLIED ALTERNATELY TO EACH HALF PRIMARY) INPUT. (SAMPLE INSPECTION)

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04291 DATE 10/20/63

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS CONTRACT 9-497 DRAWN <u>Ed. Doring</u> 24 SEP 63 CHECKED <u>Ed. Foster</u> 27 SEP 63 APPROVAL <u>E. Foster</u> 27 SEP 63 APPROVAL <u>W. G. Gorman</u> 10/28/63		MANNED SPACECRAFT CENTER HOUSTON, TEXAS TRANSFORMER, POWER (56 CT-56 VOLTS, 800 CPS, 4 VA) SPECIFICATION CONTROL DRAWING	
NASA APPROVAL <u>W. G. Gorman</u> 10/28/63 MIT APPROVAL <u>W. G. Gorman</u> 30 Oct 63		CODE IDENT NO. SIZE C 1016140	NASA DRAWING NO.
SCALE		WT	SHEET 2 OF 2

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

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REQUIREMENTS:

- 1. GENERAL:
 - A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
 - B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
- 2. INSPECTION AND ACCEPTANCE:
 - A. MECHANICAL REQUIREMENTS:
 - B. MARKING:
 - (1) PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER ND 1002019 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
 - (2) PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
 - a. SUPPLIER'S NAME
 - b. NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER
 - c. DATE CODE, OR DATE OF MANUFACTURE
 - (3) MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.
- 3. APPLICATION DATA (FOR REFERENCE): 10 LB. SPRING TENSION.

NASA PART NUMBER	MANUFACTURER'S PART NUMBER
1016141-001	485-6

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

MASTER

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REPLACED WITH CHANGE BY REV. "B" PER CM-193676 PER TDRR 06203	7 JAN 64	M.G.
		2-4-64	WIK

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 24291 DATE 10/30/82

REPLACED WITH CHANGE BY REV. B

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. NAS DWE. NO. CONTRACT 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN BY <i>Ed F...</i> DATE 26 SEP 63 CHECKED <i>Ed F...</i> 30 SEP 63 APPROVAL <i>Ed F...</i> 30 SEP 63		VALVE - CHECK	
SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		CODE IDENT NO.	NASA DRAWING NO.
FINAL FINISH NONE		C	1016141
NEXT ASSY	USED ON	SCALE NONE	WT
APPLICATION		SHEET 1 OF 1	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHT, OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

- BODY: BRASS PER QQ-B-626, COMP. 22
- O-RING: BUNA N
- POPPET BODY: STAINLESS STEEL, TYPE 304 PER QQ-S-763.
- POPPET NOSE: STAINLESS STEEL, TYPE 303 PER QQ-S-763.
- SPRING: STAINLESS STEEL, TYPE 302 (AMS 5688)

- FINISH: STAINLESS STEEL PARTS - PASSIVATE PER MIL-F-14072, E 300.

- DIMENSIONS: AS SHOWN IN TABLE.

(4) MARKING:

- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:

SUPPLIER'S NAME.

NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.

DATE CODE, OR DATE OF MANUFACTURE.

- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

(5) APPLICATION DATA (FOR REFERENCE):

5 LB. SPRING TENSION

ARROW ON VALVE SHOWS DIRECTION OF FREE FLOW.

NASA DASH NUMBER	VALVE SIZE		L	A WIDTH ACROSS FLATS	CRACKING PRESSURE PSI		REPUBLIC PART NUMBER (REF)
	TUBE OD	PIPE T			MAX	MIN	
-001	3/8	1/4	3.00	1.00	3	1	485-6-B2-2

PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING

MASTER

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON
		FRACTIONS DECIMALS ANGLES ± .02 ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		SEE REQUIREMENTS
NEXT ASSY	USED ON	
APPLICATION		

1016141 B

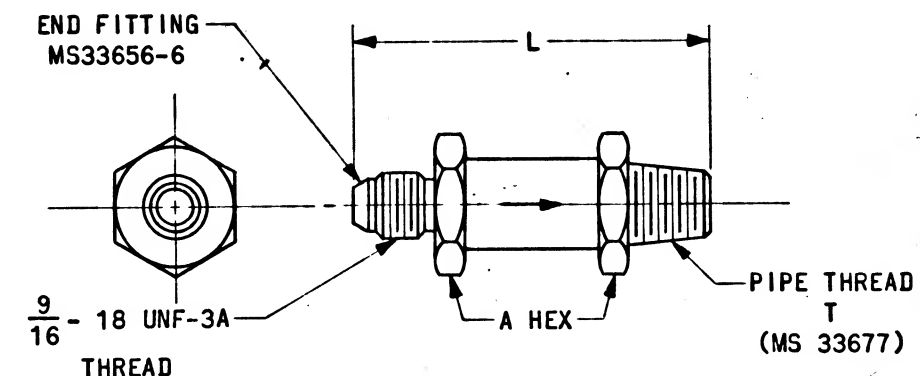
REVISIONS		
SYM	DESCRIPTION	DATE
B	REPLACES REV. 'A' WITH CHANGE PER CM-193676	7 JAN 64
	REVISED PER TDRR 06202	2-4-64

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04291

DATE

1/30/63



THE PART NUMBER IS THE DRAWING NUMBER
PLUS THE APPLICABLE DASH NUMBER

REPLACES REV 'A' WITH CHANGE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN Bender 2/27/63 CHECKED Ed Foster 18 Dec 63 APPROVAL [Signature] 18 Dec 63 APPROVAL [Signature] 2/3/64		VALVE - CHECK	
NASA APPROVAL [Signature] 2/27/64		SPECIFICATION CONTROL DRAWING	
MIT APPROVAL [Signature] 4/13/64		CODE IDENT NO. SIZE C 1016141	
SCALE NONE		WT SHEET 1 OF 1	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY BELONGING TO GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFERRING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

B. MARKING:

- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER ND 1002019 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
 - SUPPLIER'S NAME
 - NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER
 - DATE CODE, OR DATE OF MANUFACTURE
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

3. APPLICATION DATA (FOR REFERENCE): 10 LB. SPRING TENSION.

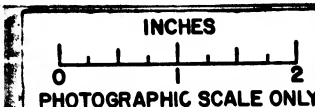
NASA PART NUMBER	MANUFACTURER'S PART NUMBER
1016141-001	485-6

PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING.

MASTER

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON
		FRACTIONS DECIMALS ANGLES ± ± ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		NONE
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS DWE NO. CONTRACT 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Ed Fagan</i> DATE 26 SEP 63 CHECKED <i>Ed Fagan</i> 30 SEP 63 APPROVAL <i>Ed Fagan</i> 30 SEP 63		VALVE - CHECK	
APPROVAL <i>Ed Fagan</i> 10/29/63		SPECIFICATION CONTROL DRAWING	
NASA APPROVAL <i>Ed Fagan</i> 10/29/63		CODE IDENT NO.	SIZE
MIT APPROVAL <i>Ed Fagan</i> 30 SEP 63		C	1016141
		SCALE NONE	WT
		SHEET 1 OF 1	



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER. AS TO THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

A		1016142		REVISIONS	
SYM	DESCRIPTION	DATE	APPROVAL		
A	REPLACED WITH CHANGE BY REV. B PER CM-194600 REVISED PER TDR 06989 3/17/64	24-JAN-64	J.B.		JAC

- REQUIREMENTS:
- 1. GENERAL:
 - A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
 - B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
 - 2. INSPECTION AND ACCEPTANCE:
 - A. MECHANICAL REQUIREMENTS:
 - B. MARKING:
 - (1) PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER ND 1002019 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
 - (2) PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
 - a. SUPPLIER'S NAME
 - b. NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER
 - c. DATE CODE, OR DATE OF MANUFACTURE
 - (3) MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

FOR INFORMATION ONLY
CLASS B RELEASE TDR No. 06989 DATE 10/3/63

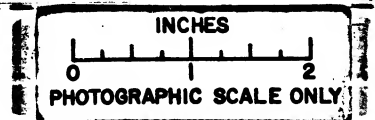
NASA PART NUMBER	MANUFACTURER'S PART NUMBER
1016142-001	FK 1055

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

MASTER

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
TOLERANCES ON	
FRACTIONS	DECIMALS ANGLES
±	± ±
DO NOT SCALE THIS DRAWING	
MATERIAL	
SEE REQUIREMENTS	
HEAT TREATMENT	
NONE	
FINAL FINISH	
NONE	
NEXT ASSY	USED ON
APPLICATION	

QTY REQD		PART OR IDENTIFYING NO.		NOMENCLATURE OR DESCRIPTION		FIND NO.
LIST OF MATERIALS						
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS NAS DWS. NO. CONTRACT 9-497				MANNED SPACECRAFT CENTER HOUSTON, TEXAS		
DRAWN J. Peterson DATE 26 SEP 63 CHECKED Ed Foster 30 SEP 63 APPROVAL L. Goodman 1/28/64				FILTER, IN-LINE SPECIFICATION CONTROL DRAWING		
NASA APPROVAL M. M. M. 1/28/64				CODE IDENT NO.	SIZE	NASA DRAWING NO.
MIT APPROVAL W. K. 30 SEP 63				C		1016142
				SCALE NONE	WT	SHEET 1 OF 1



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

1016142		REVISIONS	
SYM	DESCRIPTION	DATE	APPROVAL
B	REPLACES REV. A WITH CHANGE PER CM-194600 REVISED PER TDR 069 89 3/17/64	24-JAN-	J.B. JAC

REQUIREMENTS:

1. GENERAL:
 - A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
 - B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

- a. HOUSING: STAINLESS STEEL, TYPE 304
- b. SEAL: TEFLON

(2) FINISH: PASSIVATE PER MIL-F-14072, E300

(3) DIMENSIONS: AS SHOWN

(4) MARKING:

- a. PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
 - SUPPLIER'S NAME
 - NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
 - DATE CODE, OR DATE OF MANUFACTURE.
- b. MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

3. DESIGN INFORMATION:

- A. MAX OPERATING PRESSURE: 3000 PSIG AT 100°F
- B. PROOF PRESSURE: 4500 PSIG AT 100°F
- C. MIN BURST PRESSURE: 9000 PSIG AT 100°F

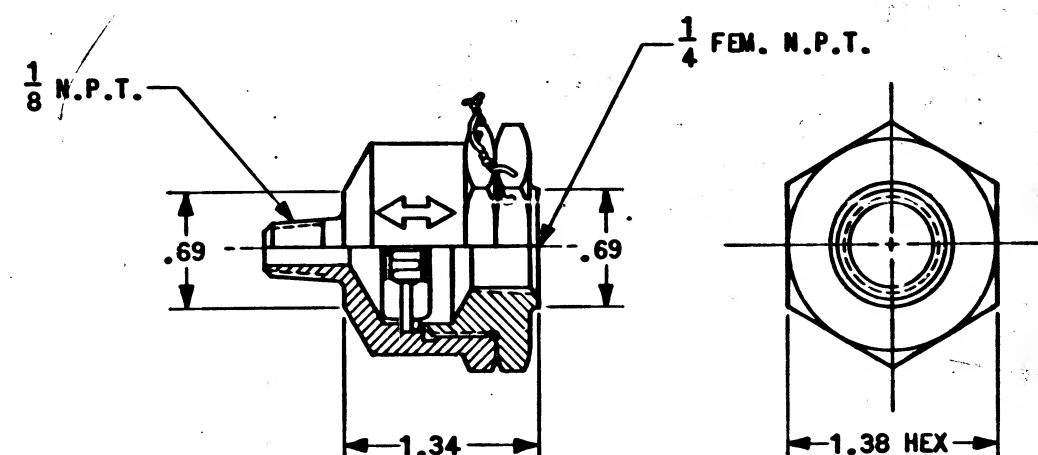
- D. EFFECTIVE FILTER AREA: 3 SQ. IN.
- E. DESIGN TEMPERATURE: 100°F
- F. ELEMENT COLLAPSE PRESSURE: 1000 PSID
- G. LEAKAGE: ZERO AT 4500 PSIG

NASA DASH NUMBER	FILTRATION RATING (MICRONS)	MANUFACTURER'S PART NUMBER	
		FILTER	FILTER ELEMENT
-001	10	FK 1055	K-10-4
-002	40	FK 1055	K-40-4
-003	40	-	K-40-4

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

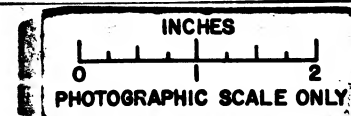
THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± — ± .02 ± —
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		NONE
NEXT ASSY	USED ON	
APPLICATION		



(B) REPLACES REV A WITH CHANGE

QTY REQ	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-097		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN PATTERSON 26-SEP-63 CHECKED FOSTER 30-SEP-63 APPROVAL KRAMLICH 30-SEP-63 APPROVAL J. Johnson 3/17/64		FILTER, IN-LINE	
NASA APPROVAL W. J. Rhine 8-17-64 MIT APPROVAL W. J. Rhine 3/17/64		SPECIFICATION CONTROL DRAWING	
CODE IDENT NO.		SIZE	NASA DRAWING NO.
SCALE NONE		WT	1016142
			SHEET 1 OF 1



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REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

- HOUSING: STAINLESS STEEL, TYPE 304
- SEAL: TEFLON

(2) FINISH: PASSIVATE PER MIL-F-14072, E300

(3) DIMENSIONS: AS SHOWN

(4) MARKING:

- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER,
AND REVISION LETTER.
DATE CODE, OR DATE OF MANUFACTURE.
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

3. DESIGN INFORMATION:

- MAX OPERATING PRESSURE: 3000 PSIG AT 100°F
- PROOF PRESSURE: 4500 PSIG AT 100°F
- MIN BURST PRESSURE: 9000 PSIG AT 100°F
- EFFECTIVE FILTER AREA: 3 SQ. IN.
- DESIGN TEMPERATURE: 100°F
- ELEMENT COLLAPSE PRESSURE: 1000 PISD
- LEAKAGE: ZERO AT 4500 PSIG

NASA DASH NUMBER	FILTRATION RATING (MICRONS)	MANUFACTURER'S PART NUMBER	
		FILTER	FILTER ELEMENT
-001	10	FK 1055	K-10-4
-002	40	FK 1055	K-40-4
-003	40	-	K-40-4
-004	10	-	K-10-4

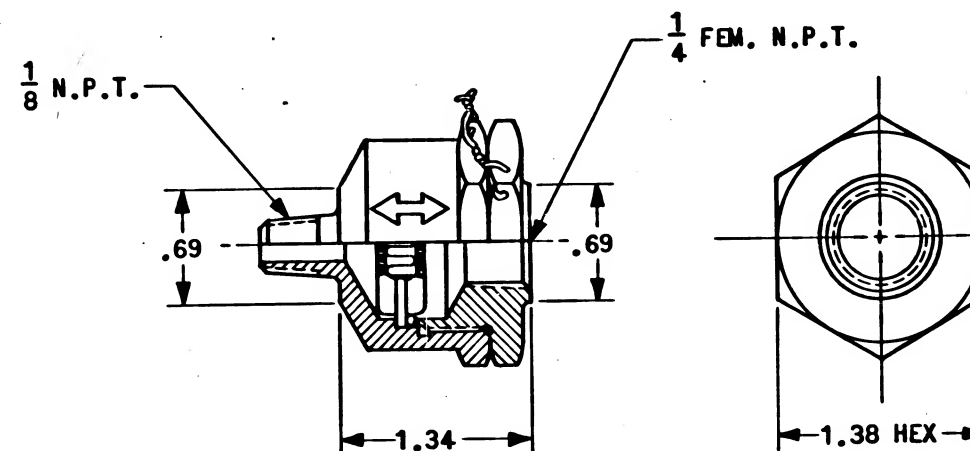
PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
FRACTIONS	DECIMALS	ANGLES
± —	± .02	± —
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		NONE
NEXT ASSY	USED ON	
		APPLICATION

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. _____ DATE _____



REPLACES REV A WITH CHANGE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
		LIST OF MATERIALS	
	MIT INSTRUMENTATION LAB CAMBRIDGE MASS CONTRACT NAS 9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
	DRAWN PATTERSON 26-SEP-63 CHECKED FOSTER 30-SEP-63 APPROVAL KRAMLICH 30-SEP-63 APPROVAL L. Johnson 3/17/64	FILTER, IN-LINE	
	NASA APPROVAL W. J. Rhee 1/3-17-64 MIT APPROVAL W. J. Rhee 1/3-17-64	SPECIFICATION CONTROL DRAWING	
		CODE IDENT NO. SIZE C	NASA DRAWING NO. 1016142
		SCALE NONE WT	SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN MIL-Q-9858.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

- HOUSING: STAINLESS STEEL, TYPE 304
- SEAL: TEFLON (REF P/N 1897185-021 AND -023)

(2) FINISH: PASSIVATE PER MIL-F-14072, E300

(3) DIMENSIONS: AS SHOWN

(4) MARKING:

- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER,
AND REVISION LETTER.
DATE CODE, OR DATE OF MANUFACTURE.
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

3. DESIGN INFORMATION:

- MAX OPERATING PRESSURE: 3000 PSIG AT 100°F
- PROOF PRESSURE: 4500 PSIG AT 100°F
- MIN BURST PRESSURE: 9000 PSIG AT 100°F

D. EFFECTIVE FILTER AREA: 3 SQ. IN.

E. DESIGN TEMPERATURE: 100°F

F. ELEMENT COLLAPSE PRESSURE: 1000 PSID

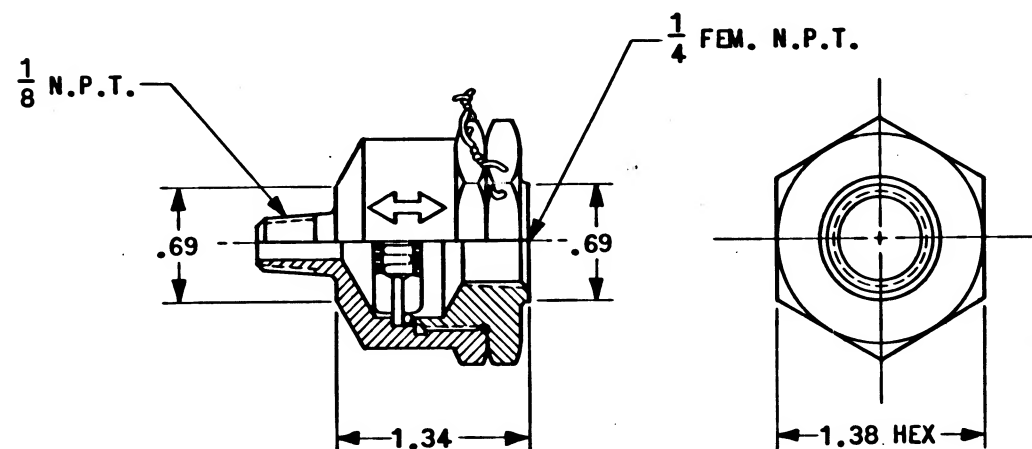
G. LEAKAGE: ZERO AT 4500 PSIG

NASA DASH NUMBER	FILTRATION RATING (MICRONS)	MANUFACTURER'S PART NUMBER	
		FILTER	FILTER ELEMENT
-001	10	FK 1055	K-10-4
-002	40	FK 1055	K-40-4
-003	40	-	K-40-4
-004	10	-	K-10-4

PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING.

THE PART NUMBER IS THE DRAWING NUMBER
PLUS THE APPLICABLE DASH NUMBER

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON	
FRACTIONS	DECIMALS ANGLES
± —	± .02 ± —
DO NOT SCALE THIS DRAWING	
MATERIAL	
SEE REQUIREMENTS	
HEAT TREATMENT	
NONE	
FINAL FINISH	
NONE	
NEXT ASSY	USED ON
APPLICATION	



② REPLACES REV A WITH CHANGE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS CONTRACT NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN PATTERSON 26-SEP-63 DATE		FILTER, IN-LINE	
CHECKED FOSTER 30-SEP-63		SPECIFICATION CONTROL DRAWING	
APPROVAL KRAMLICH 30-SEP-63			
APPROVAL J. J. J. 3/1/64			
NASA APPROVAL W. J. R. 12-17-64		CODE IDENT NO.	NASA DRAWING NO.
MIT APPROVAL W. J. R. 12/1/64		SIZE C	1016142
		SCALE NONE	WT
		SHEET 1 OF 1	

NOTICE - WHEN GOVERNMENT DRAWINGS SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN MIL-Q-9858.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

- HOUSING: STAINLESS STEEL, TYPE 304
- SEAL: TEFLON (REF P/N 1897185-021 AND -023)

(2) FINISH: PASSIVATE PER MIL-F-14072, E300

(3) DIMENSIONS: AS SHOWN

(4) MARKING:

- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER,

DATE CODE, OR DATE OF MANUFACTURE.

- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

3. DESIGN INFORMATION:

- MAX OPERATING PRESSURE: 3000 PSIG AT 100°F
- PROOF PRESSURE: 4500 PSIG AT 100°F
- MIN BURST PRESSURE: 9000 PSIG AT 100°F

D. EFFECTIVE FILTER AREA: 3 SQ. IN.

E. DESIGN TEMPERATURE: 100°F

F. ELEMENT COLLAPSE PRESSURE: 1000 PSID

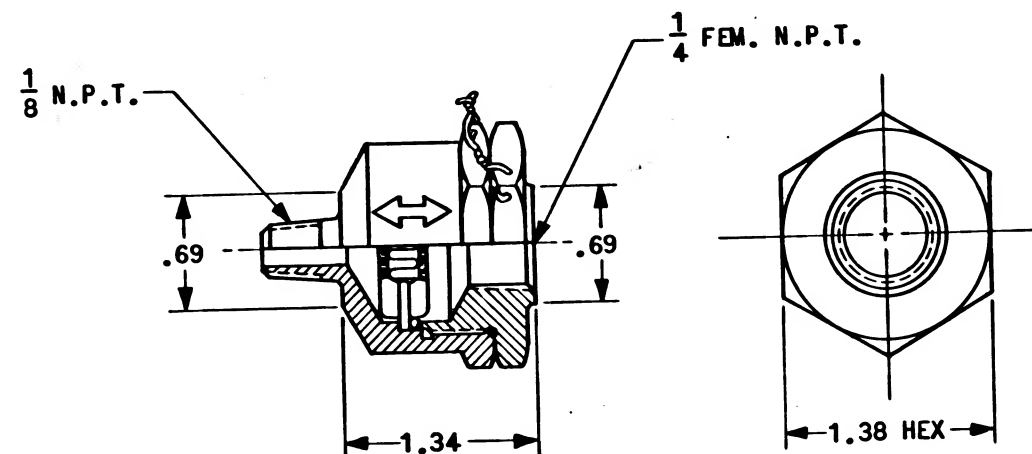
G. LEAKAGE: ZERO AT 4500 PSIG

NASA DASH NUMBER	FILTRATION RATING (MICRONS)
-001	10
-002	40
-003	40
-004	10

PROCURE ONLY FROM APPROVED SOURCES LISTED ON CONTRACTOR'S ACCEPTABLE SUPPLIERS LIST

THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± — ± .02 ± —
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
NEXT ASSY	USED ON	FINAL FINISH
		NONE
APPLICATION		



REPLACES REV A WITH CHANGE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
		LIST OF MATERIALS	
	MIT INSTRUMENTATION LAB CAMBRIDGE MASS CONTRACT NAS 9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
	DRAWN PATTERSON 26-SEP-63 CHECKED FOSTER 30-SEP-63 APPROVAL KRAMLICH 30-SEP-63 APPROVAL J. Johnson 3/12/64	FILTER, IN-LINE	
	NASA APPROVAL W. J. Rhine 13-17-64 MIT APPROVAL W. J. Rhine 17/64	SPECIFICATION CONTROL DRAWING	
		CODE IDENT NO. SIZE C	NASA DRAWING NO. 1016142
		SCALE NONE WT	SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCUR NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

B. MARKING:

- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER ND 1002019 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
 - SUPPLIER'S NAME
 - NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER
 - DATE CODE, OR DATE OF MANUFACTURE
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

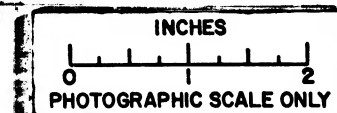
NASA PART NUMBER	MANUFACTURER'S PART NUMBER
1016142-001	FK 1055

PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING.

POSTER

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± ± ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
NEXT ASSY	USED ON	FINAL FINISH
		NONE
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS NAS CONTRACT 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>J. Peterson</i> DATE 26 SEP 63 CHECKED <i>Ed Foster</i> 30 SEP 63 APPROVAL <i>L. G. Johnson</i> 10/28/63		FILTER, IN-LINE SPECIFICATION CONTROL DRAWING	
NASA APPROVAL <i>W. J. Johnson</i> 10/28/63		CODE IDENT NO.	SIZE
MIT APPROVAL <i>W. J. Johnson</i> 30 Oct 63			C
		SCALE NONE	WT
			NASA DRAWING NO. 1016142
			SHEET 1 OF 1



FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 26291 DATE 10/2/63

1016142

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

1	
REVISIONS	
SYM	DESCRIPTION
A	REPLACED WITH CHANGE BY REV. B PER CM 192829 REVISED PER TDR 05888
DATE	APPROVAL
16 DEC 63	JHP
1/23/64	WIK

REQUIREMENTS:

1. GENERAL:
 - A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
 - B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
2. INSPECTION AND ACCEPTANCE:
 - A. MECHANICAL REQUIREMENTS:
 - (1) MARKING:
 - a. PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA PART NUMBER, DASH NUMBER AND REVISION LETTER.
 - b. PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME.
NASA PART NUMBER, DASH NUMBER, AND REVISION LETTER.
DATE CODE, OR DATE OF MANUFACTURE.
 - c. MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.
3. APPLICATION DATA (FOR REFERENCE): 20 LB. SPRING TENSION.

NASA PART NUMBER	MANUFACTURER'S PART NUMBER
1016143-001	482-1/8

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04291 DATE 10/30/63

PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING.

MASTER

REPLACED WITH CHANGE BY REV. B

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. CONTRACT 7-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Amelia</i> DATE <i>30 SEP 63</i> CHECKED <i>C. P. P. J. P.</i> <i>30 SEP 63</i> APPROVAL <i>C. P. P. J. P.</i> <i>1 Oct 63</i> APPROVAL <i>C. P. P. J. P.</i> <i>10/28/63</i>		VALVE, CHECK	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ± DO NOT SCALE THIS DRAWING MATERIAL		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT		CODE IDENT NO.	SIZE
FINAL FINISH		NASA APPROVAL <i>W. H. J. P.</i> <i>10/10/63</i>	NASA DRAWING NO. 1016143
NEXT ASSY USED ON		MIT APPROVAL <i>W. H. J. P.</i> <i>30 Oct 63</i>	SCALE NONE WT
APPLICATION		SHEET 1 OF 1	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

B 1016143

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	REPLACES REV. A WITH CHANGE PER CM 192829 REVISED PER TDR 05888	16 DEC 63	JHP EF
		1/2/64	WR

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

- BODY: BRASS PER QQ-B-626, COMP. 22
- O-RING: BUNA N
- POPPET BODY: STAINLESS STEEL, TYPE 304 PER QQ-S-763
- POPPET NOSE: STAINLESS STEEL, TYPE 303 PER QQ-S-763
- SPRING: STAINLESS STEEL, TYPE 302 (AMS 5688)

(2) FINISH: STAINLESS STEEL PARTS - PASSIVATE PER MIL-F-14072, E 300.

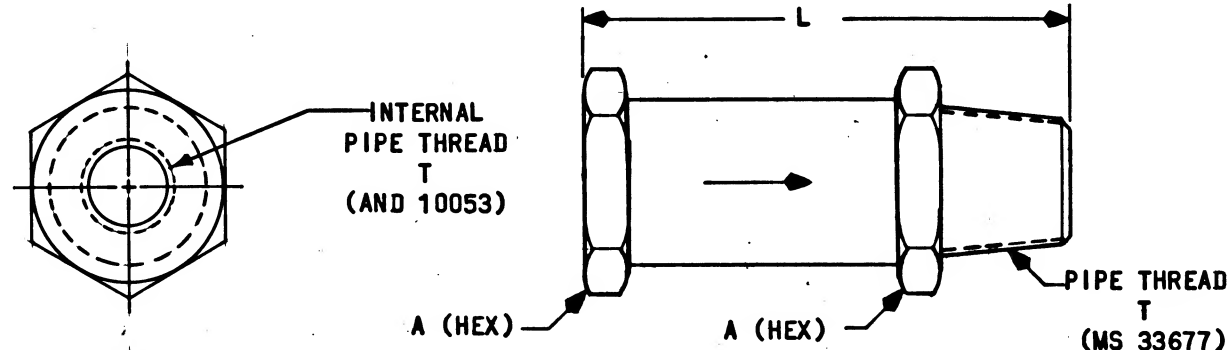
(3) DIMENSIONS: AS SHOWN IN TABLE.

(4) MARKING:

- PACKAGE: INTERNAL/INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME.
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
DATE CODE, OR DATE OF MANUFACTURE.
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

(5) APPLICATION DATA (FOR REFERENCE):

20 LB. SPRING TENSION
ARROW ON VALVE SHOWS DIRECTION OF FREE FLOW.



FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04291

DATE 10/20/62

NASA DASH NUMBER	PIPE THREAD T	L	A WIDTH ACROSS FLATS	CRACKING PRESSURE PSI		MFG'S PART NUMBER
				MAX.	MIN.	
-001	1/8	1.91	.75	3	1	482-1/8 B2-2

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

REPLACES REV A WITH CHANGE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>D. Smith</i> DATE 30 SEP 63		VALVE, CHECK	
CHECKED <i>Ed Foster</i> 20 Nov 63		SPECIFICATION CONTROL DRAWING	
APPROVAL <i>L. Keegan</i> 20 Nov 63		NASA APPROVAL <i>Baran</i>	
APPROVAL <i>L. J. Gorman</i> 12/1/64		MIT APPROVAL <i>W. H. Gorman</i> 12/1/64	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± .02 ±		CODE IDENT NO. SIZE C 1016143	
DO NOT SCALE THIS DRAWING MATERIAL SEE REQUIREMENTS		SCALE NONE WT	
HEAT TREATMENT NONE		SHEET 1 OF 1	
FINAL FINISH NONE			
NEXT ASSY	USED ON		
APPLICATION			

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MARKING:

- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA PART NUMBER, DASH NUMBER AND REVISION LETTER.
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DATE CODE, OR DATE OF MANUFACTURE.
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

3. APPLICATION DATA (FOR REFERENCE): 20 LB. SPRING TENSION.

NASA PART NUMBER	MANUFACTURER'S PART NUMBER
1016143-001	482-1/8

PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING.

MASTER

1016143

REVISIONS

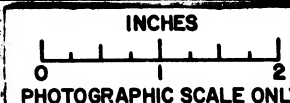
SYM	DESCRIPTION	DATE	APPROVAL
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FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04291 DATE 10/30/63

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ± DO NOT SCALE THIS DRAWING MATERIAL
		HEAT TREATMENT
NEXT ASSY	USED ON	FINAL FINISH
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.		
LIST OF MATERIALS					
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. DWS. NO. CONTRACT 497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS			
DRAWN <i>Smith</i> DATE 30 SEP 63		VALVE, CHECK SPECIFICATION CONTROL DRAWING			
CHECKED <i>C. P. P. 30 SEP 63</i>					
APPROVAL <i>W. J. P. 1 Oct 63</i>					
NASA APPROVAL <i>W. J. P. 10/10/63</i>		CODE IDENT NO.	SIZE		
MIT APPROVAL <i>W. J. P. 30 Oct 63</i>		C	1016143		
SCALE NONE		WT	SHEET 1 OF 1		



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MARKING:

- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
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NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
DATE CODE, OR DATE OF MANUFACTURE.
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

NASA PART NUMBER	MANUFACTURER'S PART NUMBER
1016144-001	MODEL EEP00 3/8 IN. (6-3/4" CENTERS)

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

MASTER

1016144

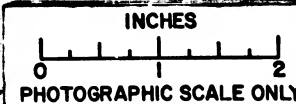
REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 24291 DATE 10/14/63

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS DWC NO. CONTRACT 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Smith</i> DATE 30 SEP 63 CHECKED <i>C. P. Jones</i> 30 SEP 63 APPROVAL <i>J. W. Wynn</i> 10 OCT 63 APPROVAL <i>J. G. Homan</i> 10 OCT 63		GUAGE, LIQUID LEVEL	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ± DO NOT SCALE THIS DRAWING MATERIAL HEAT TREATMENT FINAL FINISH		SEPCIFICATION CONTROL DRAWING CODE IDENT NO. SIZE C 1016144 NASA DRAWING NO.	
NEXT ASSY	USED ON	SCALE NONE WT	SHEET 1 OF 1
APPLICATION		MIT APPROVAL <i>W. C. Saffer</i> 30 OCT 63	



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFIRMING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MARKING:

- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
 - SUPPLIER'S NAME
 - NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
 - SUPPLIER'S LOT OR SERIAL NUMBER.
 - DATE CODE, OR DATE OF MANUFACTURE.
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

NASA PART NUMBER	MANUFACTURER'S PART NUMBER
1016145-001	559B-IM-90

PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES \pm \pm \pm
		DO NOT SCALE THIS DRAWING
		MATERIAL
		HEAT TREATMENT
NEXT ASSY	USED ON	FINAL FINISH
APPLICATION		

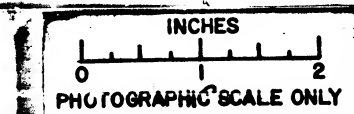
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REPLACED WITH CHANGE BY REV. "B" PER MXC-192150 PER TDRR 05215	25 NOV 63 12/10/63	JEL A.D. WJR

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04291 DATE 10/30/63

(A) REPLACED WITH CHANGE BY REV "B"

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS DWG. NO. CONTRACT 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <u>Andell J. Tove</u> DATE <u>30 SEP 63</u> CHECKED <u>C. P. Jordan</u> <u>30 SEP 63</u> APPROVAL <u>W. J. G. [Signature]</u> <u>1 Oct 63</u> APPROVAL <u>W. J. G. [Signature]</u> <u>10/2/63</u>		VALVE, RELIEF	
NASA APPROVAL <u>W. J. G. [Signature]</u> <u>10/2/63</u> MIT APPROVAL <u>W. J. G. [Signature]</u> <u>30 Oct 63</u>		SPECIFICATION CONTROL DRAWING CODE IDENT NO. SIZE C 1016145 SCALE NONE WT SHEET 1 OF 1	



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFIRMING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

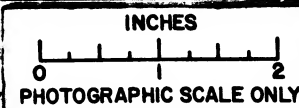
1. GENERAL:
 - A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
 - B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
2. INSPECTION AND ACCEPTANCE:
 - A. MECHANICAL REQUIREMENTS:
 - (1) MARKING:
 - a. PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
 - b. PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
SUPPLIER'S LOT OR SERIAL NUMBER.
DATE CODE, OR DATE OF MANUFACTURE.
 - c. MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

NASA PART NUMBER	MANUFACTURER'S PART NUMBER
1016145-001	559B-IM-90

PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± — ± — ± —
		DO NOT SCALE THIS DRAWING MATERIAL
		HEAT TREATMENT
NEXT ASSY	USED ON	FINAL FINISH
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS DWS NO. 9-497 DRAWN: <i>Donald J. For</i> DATE: <i>30 SEP 63</i> CHECKED: <i>C. P. P. 30 SEP 63</i> APPROVAL: <i>[Signature]</i> 1 Oct 63 APPROVAL: <i>[Signature]</i> 10/26/63		MANNED SPACECRAFT CENTER HOUSTON, TEXAS VALVE, RELIEF SPECIFICATION CONTROL DRAWING	
NASA APPROVAL: <i>[Signature]</i> 11/1/63 MIT APPROVAL: <i>[Signature]</i> 30 Oct 63		CODE IDENT NO. SIZE C 1016145	NASA DRAWING NO.
SCALE NONE WT		SHEET 1 OF 1	



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

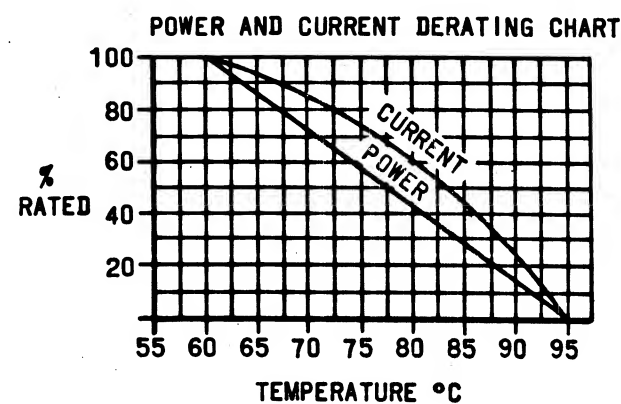
- MANUFACTURER'S PART NUMBER PER TABLE I
- DESIGN TO BE IN CONFORMANCE WITH SPECIFICATION MIL-C-15305
- SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS AS CONTAINED IN ND 1015404, CLASS 3.
- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS, AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.

2. INSPECTION AND ACCEPTANCE:

- MINIMUM MARKING: MARK UNITS PER MIL-STD-130 WITH NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER. MANUFACTURER'S PART OR TYPE NUMBER MAY APPEAR ON PART AND PACKAGE.
- LEADS: NO. 21 AWG TINNED COPPER WIRE.
- DC RESISTANCE (AT 25°C): PER TABLE I, REFERENCE PARA. 4.8.2.1 MIL-C-15305.
- INDUCTANCE: PER TABLE I, REFERENCE PARAGRAPH 4.8.2.2 MIL-C-15305.
- Q: PER TABLE I, REFERENCE PARAGRAPH 4.8.2.3 MIL-C-15305.
- DIELECTRIC WITHSTANDING VOLTAGE: 100 VOLTS (RMS). REFERENCE PARAGRAPH 4.8.3 OF MIL-C-15305.
- INSULATION RESISTANCE: 1000 MEGOHMS MINIMUM. REFERENCE PARAGRAPH 4.8.5 OF MIL-C-15305.

3. DESIGN REQUIREMENTS:

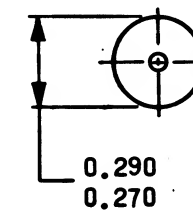
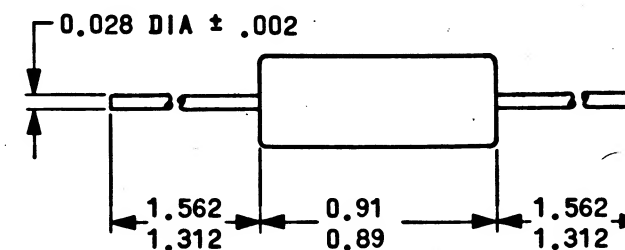
- THE UNIT SHALL MEET ALL REQUIREMENTS OF MIL-C-15305 FOR GRADE 1, CLASS B EXCEPT PARAGRAPH 3.21.1 WHICH SHALL BE WAIVED.
- ALTITUDE: 10,000 FEET OPERATING.
50,000 FEET NON-OPERATING.
- AMBIENT OPERATING TEMPERATURE RANGE: 0°C TO +60°C.
- POWER RATING: 1 WATT MAX. AT 60°C DERATED TO ZERO AT +95°C.



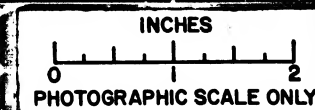
PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING.

SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ±	
DO NOT SCALE THIS DRAWING MATERIAL SEE REQUIREMENTS	
HEAT TREATMENT NONE	
FINAL FINISH NONE	
NEXT ASSY	USED ON
APPLICATION	



QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Dwg. No. CONTRACT 9-437		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Belmann</i> DATE 27 SEP 63 CHECKED <i>C. P. Prida</i> 30 SEP 63 APPROVAL <i>E. F. Fisher</i> 1 OCT 63 APPROVAL <i>V. G. Gorman</i> 10/28/63		COIL, RADIO FREQUENCY CHOKE, MOLDED	
NASA APPROVAL <i>W. H. H. H. H.</i> MIT APPROVAL <i>W. H. H. H. H.</i>		SPECIFICATION CONTROL DRAWING CODE IDENT NO. SIZE C 1016147	
SCALE NONE		WT	SHEET 1 OF 2



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

1016147

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL

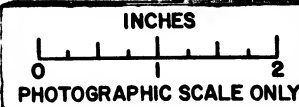
TABLE I

NASA DASH NUMBER	DELEVAN PART NUMBER	INDUCTANCE $\pm 10\%$ (MICROHENRIES)	Q MIN.	TESTING FREQUENCY (MC)	RESONANT FREQ. MIN. (MC)	DC RESISTANCE MAXIMUM (OHMS)	DC CURRENT RATING MA MAX.	CORE MATERIAL
1016147-001	2890-28	22.0	50	2.5	25	.30	1330	IRON
-002	-30	27.0	45	2.5	22	.36	1240	
-003	-32	33.0	60	2.5	20	.56	1060	
-004	-34	39.0	55	2.5	18	.65	760	
-005	-36	47.0	65	2.5	16	1.10	750	
-006	-38	56.0	65	2.5	14	1.20	700	
-007	-39	68.0	75	2.5	13	1.85	600	
-008	-40	82.0	75	2.5	13	2.20	550	
-009	-42	100.0	75	2.5	12	2.60	530	
-010	-44	120.0	95	.790	10	4.00	425	

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 06291 DATE 1/24/63

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. NAS CONTRACT 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <u>Bermann</u> DATE <u>27 SEP 63</u> CHECKED <u>C. Pigida</u> 30 SEP 63 APPROVAL <u>E. Tuller</u> 1 OCT 63 APPROVAL <u>L. Johnson</u> 10 OCT 63		COIL, RADIO FREQUENCY CHOKE, MOLDED	
HEAT TREATMENT		SPECIFICATION CONTROL DRAWING	
FINAL FINISH		CODE IDENT NO.	SIZE NASA DRAWING NO.
NEXT ASSY USED ON APPLICATION		C	1016147
		SCALE	WT SHEET 2 OF 2



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE PARTICIPATED IN THE DESIGN OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFERRING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MARKING:

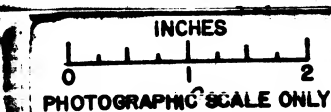
- (a) PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
- (b) PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER
SUPPLIER'S LOT OR SERIAL NUMBER.
DATE CODE, OR DATE OF MANUFACTURE.
- (c) MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

NASA PART NUMBER	MANUFACTURER'S PART NUMBER
1016148-001	ORS2-A(1/8 IN)
-002	IRS4 (1/4 IN)

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON
		FRACTIONS DECIMALS ANGLES ± ± ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		NONE
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS 02139-497 CONTRACT		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>W. J. Wilson</i> DATE 10/27/63 CHECKED <i>C. W. Wilson</i> 10/27/63 APPROVED <i>W. J. Wilson</i> 10/28/63 APPROVAL <i>W. J. Wilson</i> 10/28/63		VALVE, FLOW CONTROL	
NASA APPROVAL <i>W. J. Wilson</i> 10/28/63 MIT APPROVAL <i>W. J. Wilson</i> 10/28/63		SPECIFICATION CONTROL DRAWING NASA DRAWING NO. 1016148	
CODE IDENT NO. SIZE C		SCALE NONE WT SHEET 1 OF 1	



FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04291 DATE 10/30/63

REPLACED WITH CHANGE BY REV B

NOTICE - THESE GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE MADE FOR ANY PERSON OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION. THE UNITED STATES GOVERNMENT THEREBY MAKES NO WARRANTY, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE FACT THAT THE DRAWING IT MAY HAVE FORMULATED, FORWARDED, OR IN ANY WAY SUPPLIED THE SAID PERSON, SPECIFICATIONS OR OTHER DATA IS NOT TO BE RELEASED OR REPRODUCED OR OTHERWISE AS IN ANY MANNER LEGALIZING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSIONS TO REPRODUCE THE SAME, OR WELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

- BODY: BRASS FORGING
- PACKING: TEFLON
- HANDLE: PLASTIC

(2) DIMENSIONS: AS SHOWN

(3) DESIGN INFORMATION: MAX PRESSURE 3000 PSI

(4) MARKING:

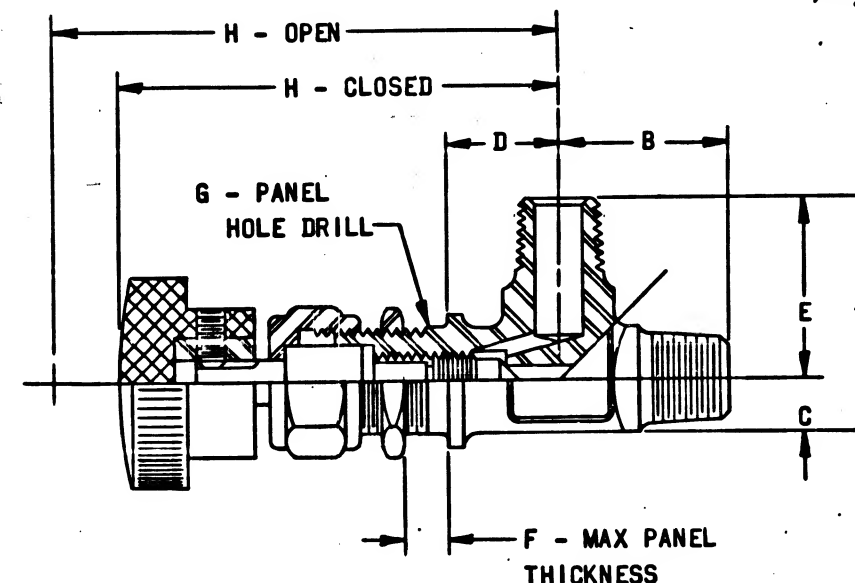
- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
 - SUPPLIER'S NAME
 - NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER
 - SUPPLIER'S LOT OR SERIAL NUMBER
 - DATE CODE, OR DATE OF MANUFACTURE
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

B 1016148

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	REPLACES REV. A WITH CHANGE PER AXC 192285 REVISED PER TDR 05150	15 NOV 63 HDE/63	J.J.J. WR

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04291 DATE 10/30/63



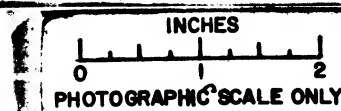
NASA PART NUMBER	END FITTING	A	B	C	D	E	F MAX	G (REF)	H CLOSED	H OPEN	STEM TYPE	ORIFICE SIZE (REF)	MFR'S PART NO.
1016148-001	.125 SWAGELOK	1.25	1.00	.25	.50	1.00	.188	.453	1.81	2.06	REGULATING	.080	ORS2-A
1016148-002	.250 SWAGELOK	1.59	1.16	.44	.44	1.16	.188	.516	2.13	2.38	REGULATING	.172	IRS4-A

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

MASTER

REPLACES REV A WITH CHANGE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
		LIST OF MATERIALS	
	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
	DRAWN WEISSERT DATE 1-28-63 CHECKED Ed Foster 4 OCT 63 APPROVAL P. Krupar 30 OCT 63 APPROVAL J. Gledhill 12/9/63	VALVE, FLOW CONTROL	
	NASA APPROVAL [Signature] MIT APPROVAL [Signature]	SPECIFICATION CONTROL DRAWING	
		CODE IDENT NO. SIZE C 1016148	NASA DRAWING NO.
		SCALE NONE WT	SHEET 1 OF 1



NOTICE - WHEN GOVERNMENT DRAWINGS SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITE RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT ASSUMES NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER. THE USER SHALL BE RESPONSIBLE FOR ANY OBLIGATION WHATSOEVER. THE USER SHALL BE RESPONSIBLE FOR ANY OBLIGATION WHATSOEVER. THE USER SHALL BE RESPONSIBLE FOR ANY OBLIGATION WHATSOEVER.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

- BODY: BRASS FORGING
- PACKING: TEFLON
- HANDLE: PLASTIC

(2) DIMENSIONS: AS SHOWN

(3) DESIGN INFORMATION: MAX PRESSURE 3000 PSI

(4) MARKING:

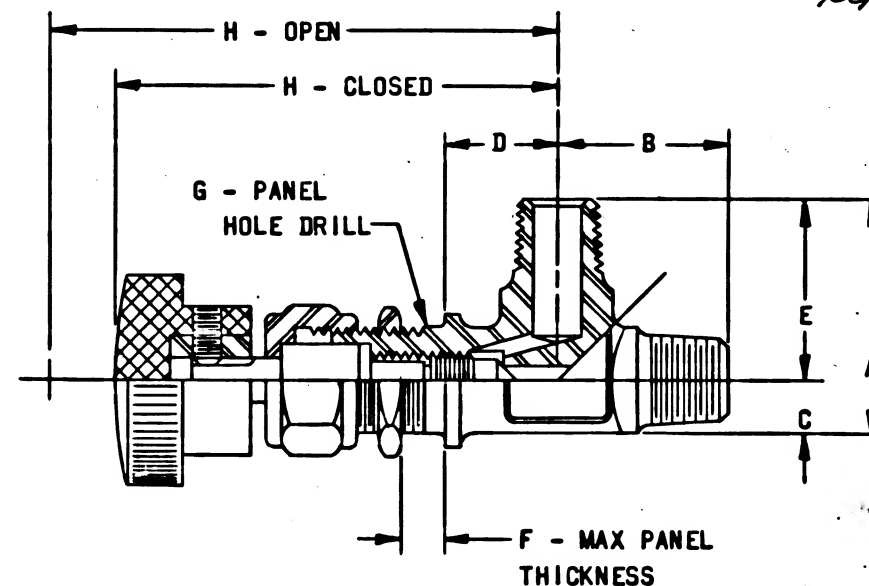
- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER
SUPPLIER'S LOT OR SERIAL NUMBER
DATE CODE, OR DATE OF MANUFACTURE
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

1016148

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	REPLACES REV. A WITH CHANGE PER MXC 192285 REVISED PER TDR 05150	15 NOV 63	J.J. J.
C	CHANGE IN ACCORDANCE WITH CM-193677	6 JAN 64	M.G. OVF
D	REPLACED WITH CHANGE BY REV. E PER CM-195574 REVISED PER TDR 07384	4 MAR 64	J.B. EF

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04291 DATE 10/30/63



NASA PART NUMBER	END FITTING	A	B	C	D	E	F MAX	G (REF)	H CLOSED	H OPEN	STEM TYPE	ORIFICE SIZE (REF)	WHITEY PART NO. (REF)
1016148-001	1/8 SWAGelok (MALE)	1.25	1.00	.25	.50	1.00	.188	.453	1.81	2.06	REGULATING	.080	ORS2-A
-002	1/4 SWAGelok (MALE)	1.59	1.16	.44	.44	1.16	.188	.516	2.12	2.38	REGULATING	.172	IRS4-A
-003	3/8 SWAGelok (FEMALE)	1.81	1.31	.50	.50	1.31	.250	.781	2.75	3.09	REGULATING	.250	IRS6-A

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± .02 ± .02 ± .02

DO NOT SCALE THIS DRAWING
MATERIAL

SEE REQUIREMENTS

HEAT TREATMENT

NONE

FINAL FINISH

NONE

NEXT ASSY

USED ON

APPLICATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN WEISSERT DATE 1-26-63 CHECKED Ed Foster 4 OCT 63 APPROVAL R. K. K. 3 OCT 63 APPROVAL J. J. J. 12/1/63		VALVE, FLOW CONTROL	
NASA APPROVAL [Signature] 1.1.65		SPECIFICATION CONTROL DRAWING	
MIT APPROVAL [Signature] 10/10/63		CODE IDENT NO.	NASA DRAWING NO.
		C	1016148
SCALE NONE		WT	SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFERRING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

- BODY: BRASS FORGING
- PACKING: TEFLON
- HANDLE: PLASTIC

(2) DIMENSIONS: AS SHOWN

(3) DESIGN INFORMATION: MAX PRESSURE 3000 PSI

(4) MARKING:

- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:

SUPPLIER'S NAME

NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER

SUPPLIER'S LOT OR SERIAL NUMBER

DATE CODE, OR DATE OF MANUFACTURE

(c) MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

NOTES:

- VALUE -004 SAME AS -001 EXCEPT FOR INCREASED LENGTH OF PACKING.

NASA DASH NUMBER	END FITTING	A	B	C	D	E	F MAX	G (REF)	H CLOSED	H OPEN	STEM TYPE	ORIFICE SIZE (REF)	MANUFACTURER'S PART NUMBER (REF)
-001	1/8 SWAGelok (MALE)	1.25	1.00	.25	.50	1.00	.188	.453	1.81	2.06	REGULATING	.080	ORS2-A
-002	1/4 SWAGelok (MALE)	1.59	1.16	.44	.44	1.16	.188	.516	2.12	2.38	REGULATING	.172	IRS4-A
-003	3/8 SWAGelok (FEMALE)	1.81	1.31	.50	.50	1.31	.250	.781	2.75	3.09	REGULATING	.250	IRS6-A
-004	1/8 SWAGelok (MALE)	1.25	1.00	.25	.50	1.00	.188	.453	1.81	2.06	REGULATING	.080	ORS2-A-9T-2

THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

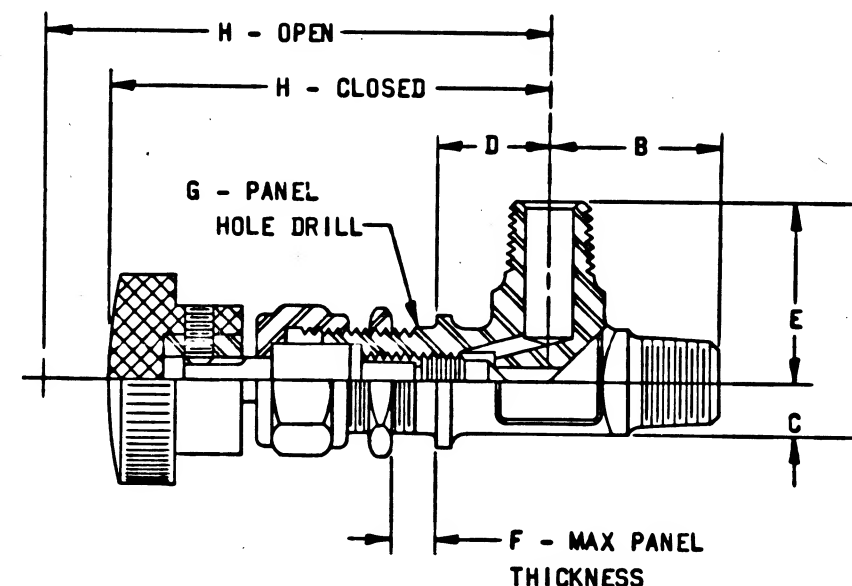
		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± ± .02 ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		NONE
NEXT ASSY	USED ON	
APPLICATION		

E 1016148

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
E	REPLACES REV. D WITH CHANGE PER CM-195574 REVISED PER TDR 07384	4 MAR 64	J.B. EF

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04291 DATE 10/30/63



REPLACES REV D WITH CHANGE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Bender</i> 1-9-63 CHECKED <i>Ed Foster</i> 4 OCT 63 APPROVAL <i>KEMPAINEN</i> 30 OCT 63 APPROVAL <i>L. Gudman</i> 9/15/64		VALVE, FLOW CONTROL	
NASA APPROVAL <i>W. J. J. 1-7-67</i> MIT APPROVAL <i>W. J. J. 7/15/64</i>		SPECIFICATION CONTROL DRAWING	
CODE IDENT NO.		SIZE	NASA DRAWING NO.
		C	1016148
SCALE NONE		WT	SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN MIL-Q-9858.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

- BODY: BRASS FORGING OR 316 STAINLESS STEEL PER QQ-S-763 COND.B.
- PACKING: TEFLON
- HANDLE: PLASTIC

(2) DIMENSIONS: AS SHOWN

(3) DESIGN INFORMATION: MAX PRESSURE 3000 PSI

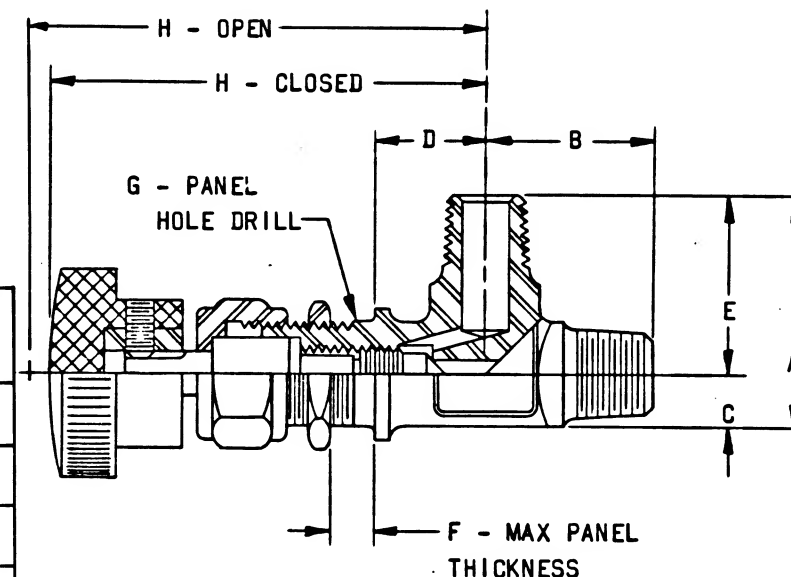
(4) MARKING:

- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
 - SUPPLIER'S NAME
 - NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER
 - SUPPLIER'S LOT OR SERIAL NUMBER
 - DATE CODE, OR DATE OF MANUFACTURE
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

NOTES:

- VALVE -004 SAME AS -001 EXCEPT FOR INCREASED LENGTH OF PACKING.
- VALVE -005 SAME AS -003 EXCEPT FOR MATERIAL.

NASA DASH NUMBER	END FITTING	A	B	C	D	E	F MAX	G (REF)	H CLOSED	H OPEN	STEM TYPE	ORIFICE SIZE (REF)	BODY MATERIAL	MANUFACTURER'S PART NUMBER (REF)
-001	1/8 SWAGELOK (MALE)	1.25	1.00	.25	.50	1.00	.188	.453	1.81	2.06	REGULATING	.080	BRASS	ORS2-A
-002	1/4 SWAGELOK (MALE)	1.59	1.16	.44	.44	1.16	.188	.516	2.12	2.38	REGULATING	.172	BRASS	IRS4-A
-003	3/8 SWAGELOK (FEMALE)	1.81	1.31	.50	.50	1.31	.250	.781	2.75	3.09	REGULATING	.250	BRASS	IRS6-A
-004	1/8 SWAGELOK (MALE)	1.25	1.00	.25	.50	1.00	.188	.453	1.81	2.06	REGULATING	.080	BRASS	ORS2-A-9T-A
-005	3/8 SWAGELOK (FEMALE)	1.81	1.31	.50	.50	1.31	.250	.781	2.75	3.09	REGULATING	.250	STAINLESS STEEL	IRS6-A-316



REPLACES REV D WITH CHANGE

THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± ± .02 ±
DO NOT SCALE THIS DRAWING
MATERIAL
SEE REQUIREMENTS
HEAT TREATMENT
NONE
FINAL FINISH
NONE
NEXT ASSY
USED ON
APPLICATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
AC SPARK PLUG DIVISION, GMC MILWAUKEE, WISCONSIN		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
ACSP PN Contract NAS 9-497		VALVE, FLOW CONTROL	
DRAWN <i>Bender</i> DATE 1-0CT-63		SPECIFICATION CONTROL DRAWING	
CHECKED <i>Ed Foster</i> 4 OCT 63		CODE IDENT NO. SIZE NASA DRAWING NO.	
APPROVAL <i>KEMPAINEN</i> 3 OCT 63		99974 C 1016148	
APPROVAL <i>L. Gudman</i> 11/1/64		SCALE NONE WT SHEET 1 OF 1	
NASA APPROVAL <i>W. J. 11/1/64</i>			
MIT APPROVAL <i>W. J. 11/1/64</i>			

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN MIL-Q-9858.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

- (a) BODY: BRASS FORGING OR 316 STAINLESS STEEL PER QQ-S-763 COND.B.
- (b) PACKING: TEFLON
- (c) HANDLE: PHENOLIC PLASTIC

(2) DIMENSIONS: AS SHOWN

(3) DESIGN INFORMATION: MAX PRESSURE 3000 PSI

(4) MARKING:

~~(a) PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER AND DASH NUMBER.~~

(b) PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION PER MIL-STD-129.

SUPPLIER'S NAME

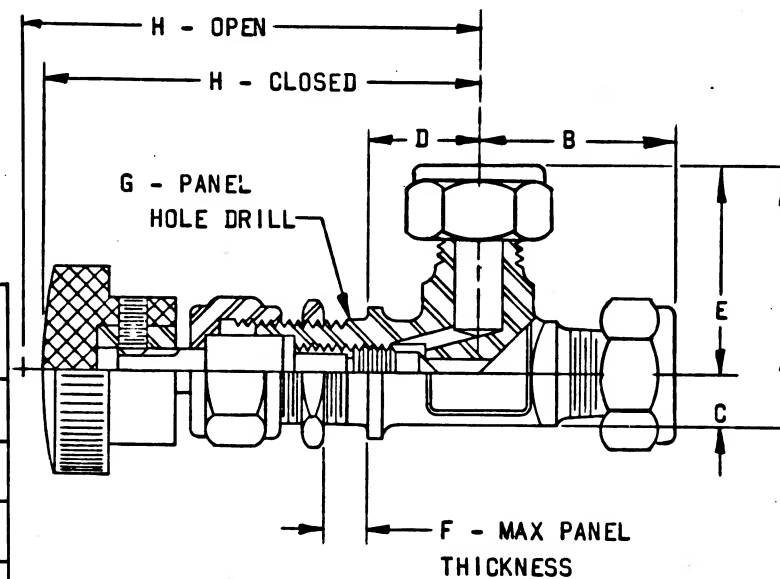
NASA DRAWING NUMBER AND DASH NUMBER

(c) MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

NOTES:

1. VALVE -004 SAME AS -001 EXCEPT FOR INCREASED LENGTH OF PACKING.
2. VALVE -005 SAME AS -003 EXCEPT FOR MATERIAL.

NASA DASH NUMBER	END FITTING	A ±.032	B ±.032	C ±.032	D ±.032	E ±.032	F MAX	G (REF)	H CLOSED (REF)	H OPEN (REF)	STEM TYPE	ORIFICE SIZE (REF)	BODY MATERIAL	MANUFACTURER'S PART NUMBER (REF)
-001	1/8 SWAGELOK	1.25	1.00	.25	.44	1.00	.250	.453	1.81	2.06	REGULATING	.080	BRASS	ORS2-A
-002	1/4 SWAGELOK	1.59	1.16	.44	.44	1.16	.250	.516	2.12	2.38	REGULATING	.172	BRASS	IRS4-A
-003	3/8 SWAGELOK	1.81	1.31	.50	.50	1.31	.250	.781	2.75	3.09	REGULATING	.250	BRASS	IRS6-A
-004	1/8 SWAGELOK	1.25	1.00	.25	.44	1.00	.250	.453	1.81	2.06	REGULATING	.080	BRASS	ORS2-A-9T-A
-005	3/8 SWAGELOK	1.81	1.31	.50	.50	1.31	.250	.781	2.75	3.09	REGULATING	.250	STAINLESS STEEL	IRS6-A-316



Ⓔ REPLACES REV D WITH CHANGE

THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON CONTRACTOR'S ACCEPTABLE SUPPLIERS LIST.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± .02 ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		NONE
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
		LIST OF MATERIALS	
	AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS Contract NAS 9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
	DRAWN <i>Bender</i> 7 OCT 63 CHECKED <i>Ed Foster</i> 4 OCT 63 APPROVAL <i>KEMPAINEN</i> 3 OCT 63 APPROVAL <i>L. J. J. J.</i> 13/64	VALVE, FLOW CONTROL	
	NASA APPROVAL <i>W. J. J. J.</i> 17/67 MIT APPROVAL <i>W. J. J. J.</i> 17/67	SPECIFICATION CONTROL DRAWING	
		CODE IDENT NO. SIZE 99974 C	NASA DRAWING NO. 1016148
		SCALE NONE WT	SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION. AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MARKING:

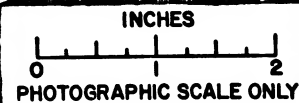
- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER
SUPPLIER'S LOT OR SERIAL NUMBER,
DATE CODE, OR DATE OF MANUFACTURE.
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

NASA PART NUMBER	MANUFACTURER'S PART NUMBER
1016148-001	ORS2-A(1/8 IN)
-002	IRS4 (1/4 IN)

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON	
FRACTIONS	DECIMALS ANGLES
±	± ±
DO NOT SCALE THIS DRAWING	
MATERIAL	
SEE REQUIREMENTS	
HEAT TREATMENT	
NONE	
FINAL FINISH	
NONE	
NEXT ASSY	USED ON
APPLICATION	

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS 02139-4377 DWC NO. CONTRACT		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>R. Williams</i> DATE <i>10/28/63</i> CHECKED <i>C. Wilson</i> DATE <i>10/28/63</i> APPROVAL <i>[Signature]</i> DATE <i>10/28/63</i> APPROVAL <i>[Signature]</i> DATE <i>10/28/63</i>		VALVE, FLOW CONTROL	
NASA APPROVAL <i>[Signature]</i> DATE <i>10/28/63</i> MIT APPROVAL <i>[Signature]</i> DATE <i>10/28/63</i>		SPECIFICATION CONTROL DRAWING	
CODE IDENT NO.	SIZE	NASA DRAWING NO.	
	C	1016148	
SCALE	NONE	WT	SHEET 1 OF 1



FOR INFORMATION ONLY

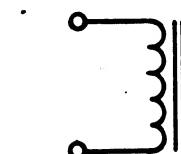
CLASS B RELEASE TDR No. 04291 DATE 10/30/63

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OMISSION, MISSTATEMENT, OR ANY FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA OR MAY TO BE DEEMED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER ENDORSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

1			
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REPLACED WITH CHANGE BY REV. B PER MXC 192237 REVISED PER TDR 05305	11/27/63	J.J. EF WR

REQUIREMENTS:

1. GENERAL:
 - A. UNITED TRANSFORMER CORP. PART NUMBER PER TABLE I
 - B. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
 - C. DESIGN TO BE IN CONFORMANCE WITH SPECIFICATION MIL-T-27.
 - D. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
2. INSPECTION AND ACCEPTANCE:
 - A. UNIT SHALL MEET THE REQUIREMENTS OF TABLE I.
 - B. MARKING: MARK PERMANENTLY AND LEGIBLY WITH THE NASA PART NUMBER, DASH NUMBER, AND REVISION LETTER, AND CONNECTION DATA. THE MANUFACTURER'S PART NUMBER MAY APPEAR ON PART AND PACKAGE.
 - C. CASE SIZE: 1-13/16 DIAMETER X 1-3/16
MOUNTING: 6-32 INSERTS, 2 REQUIRED
 - D. DIELECTRIC STRENGTH: APPLY 500 VOLTS (RMS) BETWEEN WINDING AND CASE.
 - E. INSULATION RESISTANCE: 10,000 MEGOHMS MIN. AT 25°C
3. DESIGN REQUIREMENTS:
 - A. THE UNIT SHALL MEET ALL REQUIREMENTS OF MIL-T-27 FOR GRADE 4, CLASS R, LIFE EXPECTANCY X, FAMILY 20 IN AN AMBIENT TEMPERATURE OF 65°C.
 - B. ALTITUDE: 10,000 FEET OPERATING; 50,000 FEET NON-OPERATING
 - C. AMBIENT OPERATING TEMPERATURE RANGE: 0°C TO +65°C



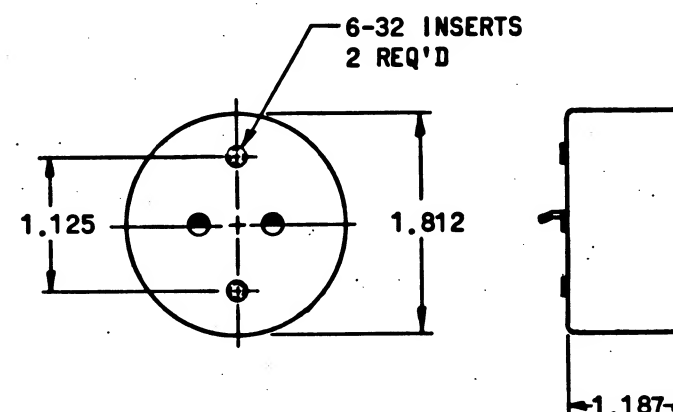
SCHEMATIC DIAGRAM

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04291 DATE 10/31/83

TABLE I

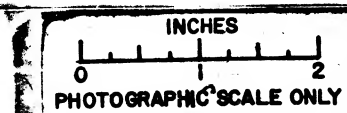
NASA DASH NUMBER	UTC PART NO.	UTC CATALOG REFERENCE	(AT 25°C) DC RESISTANCE $\Omega \pm 20\%$	MAX. DC MA	INDUCTANCE $\pm 1\%$ (0 DC)
1016149-1	FL-212	HQA-1	0.5	400	5 MHY
-2	FL-213	HQA-2	1.0	260	12.5 MHY
-3	FL-214	HQA-3	1.8	200	20 MHY
-4	FL-215	HQA-4	2.3	160	30 MHY
-5	FL-216	HQA-5	3.6	130	50 MHY
-6	FL-217	HQA-6	5.8	100	80 MHY
-7	FL-218	HQA-7	9.1	85	125 MHY
-8	FL-219	HQA-8	15	65	200 MHY
-9	FL-220	HQA-9	25	50	300 MHY
-10	FL-221	HQA-10	38	40	0.5 HY
-11	FL-222	HQA-11	56	35	0.75 HY
-12	FL-223	HQA-12	96	26	1.25 HY
-13	FL-224	HQA-13	154	20	2 HY
-14	FL-225	HQA-14	250	16	3 HY
-15	FL-226	HQA-15	410	13	5 HY
-16	FL-227	HQA-16	615	10	7.5 HY
-17	FL-228	HQA-17	740	9	10 HY
-18	FL-229	HQA-18	1115	8	15 HY
-19	FL-230	SPECIAL	2.1	180	25 MHY



REPLACED WITH CHANGE BY REV B

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		QTY REQD		PART OR IDENTIFYING NO.		NOMENCLATURE OR DESCRIPTION		FIND NO.	
TOLERANCES ON		LIST OF MATERIALS							
FRACTIONS DECIMALS ANGLES		MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. CONTRACT 1059-1007 DRAWN <i>Barman</i> DATE 10/27/63 CHECKED <i>M. MANNING</i> 7 OCT 63 APPROVAL <i>Fuller</i> 8 OCT 63 APPROVAL <i>Johnson</i> 10/28/63							
DO NOT SCALE THIS DRAWING		MANNED SPACECRAFT CENTER HOUSTON, TEXAS							
MATERIAL		REACTOR (TOROIDAL)							
SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING							
HEAT TREATMENT		NASA APPROVAL <i>Fuller</i> 10/28/63		CODE IDENT NO.		SIZE		NASA DRAWING NO.	
NONE		MIT APPROVAL <i>W. H. H. Jr.</i> 30 Oct 63		C		1016149			
FINAL FINISH		SCALE none		WT		SHEET 1 OF 1			
NONE									
APPLICATION									



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSES THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYS ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- UNITED TRANSFORMER CORP. PART NUMBER PER TABLE I
- SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
- DESIGN TO BE IN CONFORMANCE WITH SPECIFICATION MIL-T-27.
- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.

2. INSPECTION AND ACCEPTANCE:

- UNIT SHALL MEET THE REQUIREMENTS OF TABLE I.
- MARKING: MARK PERMANENTLY AND LEGIBLY WITH THE NASA PART NUMBER, DASH NUMBER, AND REVISION LETTER, AND CONNECTION DATA. THE MANUFACTURER'S PART NUMBER MAY APPEAR ON PART AND PACKAGE.
- CASE SIZE: 1-13/16 DIAMETER X 1-3/16
MOUNTING: 6-32 INSERTS, 2 REQUIRED
- DIELECTRIC STRENGTH: APPLY 500 VOLTS (RMS) BETWEEN WINDING AND CASE.
- INSULATION RESISTANCE: 10,000 MEGOHMS MIN. AT 25°C

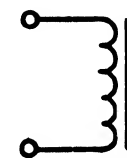
3. DESIGN REQUIREMENTS:

- THE UNIT SHALL MEET ALL REQUIREMENTS OF MIL-T-27 FOR GRADE 4, CLASS R, LIFE EXPECTANCY X, FAMILY 20 IN AN AMBIENT TEMPERATURE OF 65°C.
- ALTITUDE: 10,000 FEET OPERATING; 50,000 FEET NON-OPERATING
- AMBIENT OPERATING TEMPERATURE RANGE: 0°C TO +65°C

TABLE I

NASA DASH NUMBER	UTC PART NO.	UTC CATALOG REFERENCE	(AT 25°C) DC RESISTANCE $\Omega \pm 20\%$	MAX. DC MA	INDUCTANCE $\pm 1\%$ (0 DC)
1016149-1	FL-212	HQA-1	0.5	400	5 MHY
-2	FL-213	HQA-2	1.0	260	12.5 MHY
-3	FL-214	HQA-3	1.8	200	20 MHY
-4	FL-215	HQA-4	2.3	160	30 MHY
-5	FL-216	HQA-5	3.6	130	50 MHY
-6	FL-217	HQA-6	5.8	100	80 MHY
-7	FL-218	HQA-7	9.1	65	125 MHY
-8	FL-219	HQA-8	15	65	200 MHY
-9	FL-220	HQA-9	25	50	300 MHY
-10	FL-221	HQA-10	38	40	0.5 HY
-11	FL-222	HQA-11	56	35	0.75 HY
-12	FL-223	HQA-12	96	26	1.25 HY
-13	FL-224	HQA-13	154	20	2 HY
-14	FL-225	HQA-14	250	16	3 HY
-15	FL-226	HQA-15	410	13	5 HY
-16	FL-227	HQA-16	615	10	7.5 HY
-17	FL-228	HQA-17	740	9	10 HY
-18	FL-229	HQA-18	1115	8	15 HY
-19	FL-230	SPECIAL	2.1	180	25 MHY

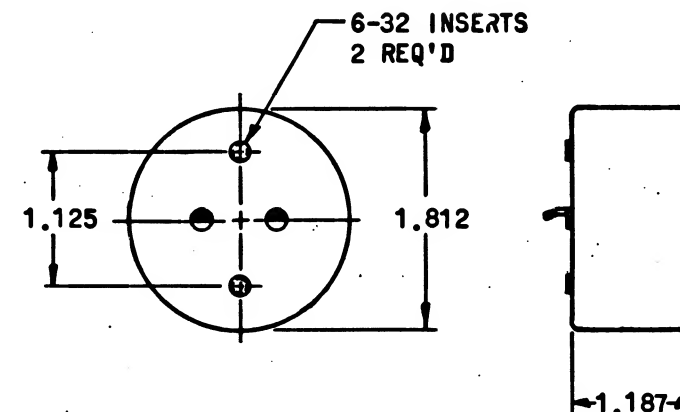
PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.



SCHEMATIC DIAGRAM

FOR INFORMATION ONLY

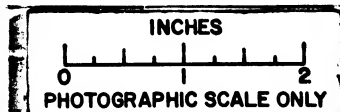
CLASS B RELEASE FOR No. 04-91 DATE 10/24/83



MASTER

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
 \pm \pm \pm
DO NOT SCALE THIS DRAWING
MATERIAL
SEE REQUIREMENTS
HEAT TREATMENT
NONE
FINAL FINISH
NONE

QTY REQ	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. CONTRACT 1859-237		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Barman</i> DATE 68 CHECKED <i>M. Manning</i> 7 OCT 63 APPROVAL <i>F. J. ...</i> 8 OCT 63 APPROVAL <i>W. J. ...</i> 10/28/63		REACTOR (TOROIDAL)	
NASA APPROVAL <i>W. J. ...</i> 10/28/63		SPECIFICATION CONTROL DRAWING	
MIT APPROVAL <i>W. J. ...</i> 10/28/63		CODE IDENT NO.	NASA DRAWING NO.
		C	1016149
SCALE none		WT	SHEET 1 OF 1



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFIRMING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

REQUIREMENTS:

1. GENERAL:

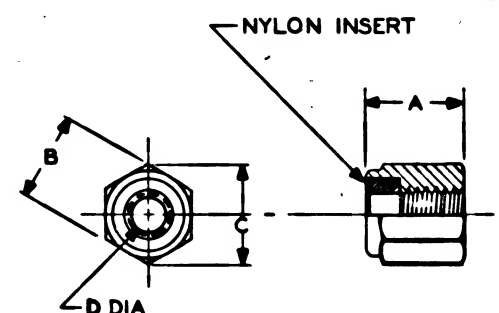
- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
- PERFORMANCE REQUIREMENTS: MIL-N-25027

2. INSPECTION AND ACCEPTANCE:

- MATERIAL: STAINLESS STEEL, TYPE 303
- FINISH: PASSIVATE PER MIL-F-14072, E300
- DIMENSIONS: AS SHOWN IN TABLE
- MARKING:
 - PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER
DATE CODE, OR DATE OF MANUFACTURE
 - MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04-91 DATE 10/30/63



NASA PART NUMBER	DIA. D (REF)	THREAD SIZE	A		B		C	ELASTIC STOP NUT PART NUMBER
			MAX.	MIN.	MAX.	MIN.	MIN.	
1016151-002	.086	2-56 NC-3B	.153	.133	.252	.240	.275	79NM-26
-004	.112	4-40 NC-3B	.153	.133	.252	.240	.275	79NM-40
-006	.138	6-32 NC-3B	.188	.168	.314	.302	.344	79NM-62
-008	.164	8-32 NC-3B	.239	.219	.346	.334	.378	79NM-82
-010	.190	10-32 NF-3B	.249	.229	.377	.365	.413	79NM-02
-012	.250	14-28 UNF-3B	.328	.298	.440	.428	.488	79NM-048

PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING.

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± ± ±
DO NOT SCALE THIS DRAWING
MATERIAL
SEE REQUIREMENTS
HEAT TREATMENT
NONE
FINAL FINISH
NONE

NEXT ASSY USED ON
APPLICATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS 02139 CONTRACT		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <u>P. J. Jones</u> DATE <u>10/2/63</u> CHECKED <u>P. Wilson</u> DATE <u>7/63</u> APPROVAL <u>P. Jones</u> DATE <u>7/63</u> APPROVAL <u>P. Jones</u> DATE <u>7/63</u>		NUT - SELF LOCKING (NYLON INSERT, COARSE CLASS 3B NC)	
NASA APPROVAL <u>P. Jones</u> DATE <u>7/63</u>		SPECIFICATION CONTROL DRAWING	
MIT APPROVAL <u>P. Jones</u> DATE <u>7/63</u>		NASA DRAWING NO. 1016151	
SCALE NONE		WT	SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFIRMING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
- PERFORMANCE REQUIREMENTS: MIL-N-25027

2. INSPECTION AND ACCEPTANCE:

- MATERIAL: STAINLESS STEEL, TYPE 303
- FINISH: PASSIVATE PER MIL-F-14072, E300
- DIMENSIONS: AS SHOWN IN TABLE
- MARKING:
 - PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
 - SUPPLIER'S NAME
 - NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER
 - DATE CODE, OR DATE OF MANUFACTURE
 - MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

NASA DASH NUMBER	DIA D (REF)	THREAD SIZE	A		B		C	MANUFACTURER'S PART NUMBER
			MAX	MIN	MAX	MIN	MIN	
-002	.086	2-56 NC-3B	.153	.133	.252	.240	.275	79NM-26
-004	.112	4-40 NC-3B	.153	.133	.252	.240	.275	79NM-40
-006	.138	6-32 NC-3B	.188	.168	.314	.302	.344	79NM-62
-008	.164	8-32 NC-3B	.239	.219	.346	.334	.378	79NM-82
-010	.190	10-32 NF-3B	.249	.229	.377	.365	.413	79NM-02
-011	.190	10-24 UNC-3B	.249	.229	.377	.365	.413	79NM-04
-012	.250	1/4-28 UNF-3B	.328	.298	.440	.428	.488	79NM-048
-013	.250	1/4-20 UNC-3B	.328	.298	.440	.428	.488	79NE-040
-014	.312	5/16-24 UNF-3B	.359	.329	.502	.490	.557	79NE-054
-015	.312	5/16-18 UNC-3B	.359	.329	.502	.490	.557	79NE-058
-016	.375	3/8-24 UNF-3B	.468	.438	.565	.553	.628	79NE-064
-017	.375	3/8-16 UNC-3B	.468	.438	.565	.553	.628	79NE-066

THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

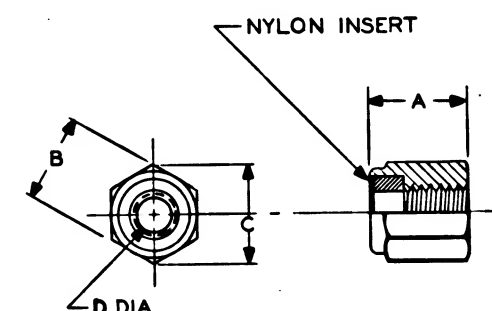
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ± DO NOT SCALE THIS DRAWING MATERIAL SEE REQUIREMENTS HEAT TREATMENT NONE FINAL FINISH NONE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS 01-491 CONTRACT		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>[Signature]</i> DATE 10/16/63 CHECKED <i>[Signature]</i> DATE 10/16/63 APPROVAL <i>[Signature]</i> DATE 10/16/63 APPROVAL <i>[Signature]</i> DATE 10/16/63		NUT - SELF LOCKING (NYLON INSERT)	
NASA APPROVAL <i>[Signature]</i> DATE 10/16/63 MIT APPROVAL <i>[Signature]</i> DATE 10/16/63		SPECIFICATION CONTROL DRAWING	
CODE IDENT NO. SIZE C		NASA DRAWING NO. 1016151	
SCALE NONE WT		SHEET 1 OF 1	

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 016151 DATE 10/30/12



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY CALIBRATION, REVISIONS, OR THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA. IT IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
- PERFORMANCE REQUIREMENTS: MIL-N-25027

2. INSPECTION AND ACCEPTANCE:

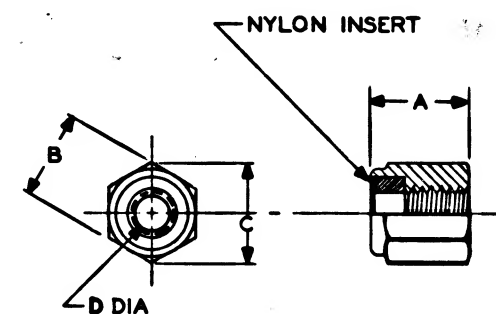
- MATERIAL: STAINLESS STEEL, TYPE 303
- FINISH: PASSIVATE
- DIMENSIONS: AS SHOWN IN TABLE

D. MARKING:

- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER
DATE CODE, OR DATE OF MANUFACTURE
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 24-91 DATE 10/30/63

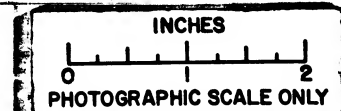


NASA PART NUMBER	DIA. D (REF)	THREAD SIZE	A		B		C	ELASTIC STOP NUT PART NUMBER
			MAX.	MIN.	MAX.	MIN.	MIN.	
1016151-002	.086	2-56 NC-38	.153	.133	2.52	2.40	.275	79NM-26
-004	.112	4-40 NC-38	.153	.133	2.52	2.40	.275	79NM-40

PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± ± ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		NONE
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS 02139 CONTRACT		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <u>P. J. P.</u> DATE <u>10/27/63</u> CHECKED <u>W. J. P.</u> DATE <u>10/27/63</u> APPROVAL <u>W. J. P.</u> DATE <u>10/27/63</u> APPROVAL <u>W. J. P.</u> DATE <u>10/27/63</u>		NUT - SELF LOCKING (NYLON INSERT, COARSE CLASS 38 NC)	
NASA APPROVAL <u>W. J. P.</u> DATE <u>10/27/63</u> MIT APPROVAL <u>W. J. P.</u> DATE <u>10/27/63</u>		CODE IDENT NO. SIZE C	NASA DRAWING NO. 1016151
SCALE NONE		WT	SHEET 1 OF 1



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPORTED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

REQUIREMENTS:

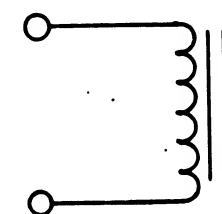
1. GENERAL:
 - A. TRANSFORMER DESIGN, INC. PART NO. TD-797
 - B. AIRPAX ELECTRONICS, PART NO. LT-2211
 - C. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
 - D. DESIGN TO BE IN CONFORMANCE WITH SPECIFICATION MIL-T-27.
 - E. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
2. INSPECTION AND ACCEPTANCE:
 - A. UNIT SHALL MEET ALL REQUIREMENTS OF TABLE I.
 - B. COLOR: UNIT SHALL BE FINISHED WITH COLOR 514 OF ANA BULLETIN 157 (INSTRUMENT BLACK).
 - C. MARKING: MARK PERMANENTLY AND LEGIBLY WITH THE NASA DRAWING NUMBER AND REVISION LETTER PLUS ALL MARKING REQUIREMENTS OF MIL-T-27. THE MANUFACTURER'S PART NUMBER MAY APPEAR ON PART AND PACKAGE.
3. DESIGN REQUIREMENTS:
 - A. THE UNIT SHALL MEET ALL REQUIREMENTS OF MIL-T-27 FOR GRADE 4, CLASS R, LIFE EXPECTANCY X, IN AN AMBIENT TEMPERATURE OF 65°C EXCEPT PARAGRAPH 3.1 AND LIFE TEST UNDER GROUP C INSPECTION TESTS WHICH SHALL BE WAIVED.
 - B. ALTITUDE: 10,000 FEET OPERATING, 50,000 FEET NON-OPERATING.
 - C. AMBIENT OPERATING TEMPERATURE RANGE: 0°C TO +65°C
 - D. SOLDER USE FOR ELECTRICAL CONNECTIONS SHALL BE COMPOSITION SN60 PER QQ-S-571C.
 - E. MAXIMUM WORKING VOLTAGE: 175 VOLTS INSTANTANEOUS.
 - F. MAXIMUM DC CURRENT: 800 MA.

TABLE I
INSPECTION TESTS

NUMBERS IN PARAGRAPH COLUMN REFER TO PARAGRAPH NUMBERS IN SPECIFICATION MIL-T-27	
PARAGRAPH	
4.7.3.2.1	SEALING
4.7.5	DIELECTRIC STRENGTH: APPLY 500 VOLTS (RMS) BETWEEN WINDING AND CASE.
4.7.6	INDUCED VOLTAGE: APPLY 56 VOLTS, 2000 CPS TO TERMINAL 1 AND 2.
4.7.7	INSULATION RESISTANCE: 10,000 MEGOHMS MINIMUM AT 25°C.
4.7.9.4	INDUCTANCE: SHALL BE 15 MILLIHENRIES \pm 10% WITH 28 VOLTS, 1000 CPS 800 MADC APPLIED.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

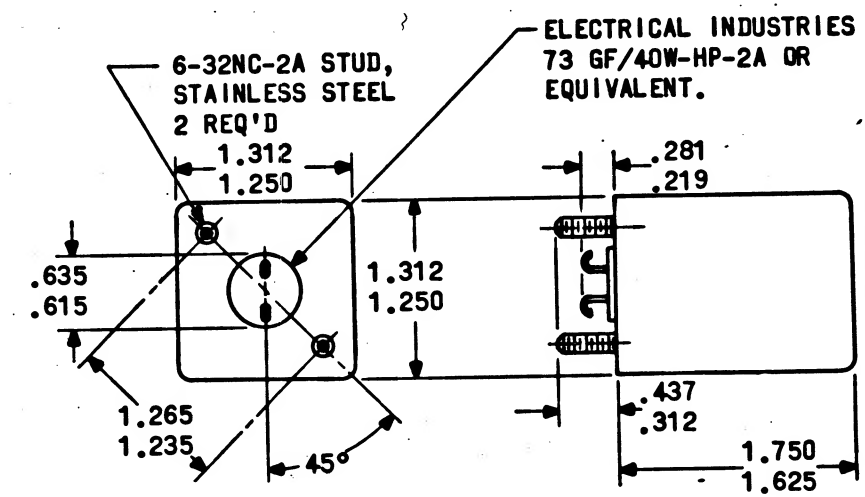
2		1	
1016152		REVISIONS	
SYM	DESCRIPTION	DATE	APPROVAL



SCHEMATIC DIAGRAM
VOLTAGES AND CURRENTS ARE RMS
VALUES UNLESS OTHERWISE NOTED

FOR INFORMATION ONLY

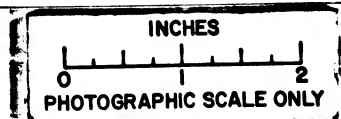
CLASS B RELEASE TDR No. 04291 DATE 10/30/63



MASTED

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES \pm \pm \pm
		DO NOT SCALE THIS DRAWING MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT NONE
		FINAL FINISH NONE
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. NAS CONTRACT 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Patterson</i> DATE 20 OCT 63 CHECKED <i>W. Diehl</i> 4 Oct 63 APPROVAL <i>E. Fuller</i> 8 Oct 63 APPROVAL <i>W. Gorman</i> 10 Oct 63		REACTOR (15 MILLIHENRIES, 800 MADC)	
NASA APPROVAL <i>W. Gorman</i> 10 Oct 63 MIT APPROVAL <i>W. Gorman</i> 30 Oct 63		SPECIFICATION CONTROL DRAWING CODE IDENT NO. SIZE C 1016152	
SCALE NONE		SHEET 1 OF 1	



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFIRMING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREOF.

REQUIREMENTS:

1. GENERAL:

- A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND-1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- (1) MARKING: (PER MIL-STD-130) PARTS SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME OR SYMBOL, PART NUMBER OR TYPE NUMBER, RESISTANCE VALUE AND TERMINAL MARKING.

B. ELECTRICAL REQUIREMENTS:

- (1) TOTAL RESISTANCE: PER TABLE I.
- (2) RESISTANCE TOLERANCE: PER TABLE I
- (3) EQUIVALENT NOISE RESISTANCE (FIGURE 1): 140 OHMS MAX. AT 4 RPM.
- (4) MAXIMUM, MINIMUM END RESISTANCE: 0.2 PERCENT OF THE NOMINAL RESISTANCE VALUE OR 1.0 OHM WHICHEVER IS GREATER.

3. DESIGN REQUIREMENTS:

- A. POWER RATING AT 80°C: 4 WATTS. (SEE DERATING CURVE)
- B. INDEPENDENT LINEARITY: 2% MAX.
- C. TEMPERATURE RANGE: -55°C TO +100°C.
- D. TEMPERATURE COEFFICIENT OF RESISTANCE: .002%/°C MAX.
- E. DIELECTRIC STRENGTH: 900V (RMS), 5 SECONDS.
- F. MECHANICAL ANGLE: 320 ± 5 DEGREES.
- G. ELECTRICAL ANGLE: 320 ± 5 DEGREES.
- H. FUNCTIONAL ANGLE: 310 ± 5 DEGREES.

NASA PART NUMBER	RESISTANCE OHMS	RESOLUTION %
1016153-001	50,000 ± 5%	.08

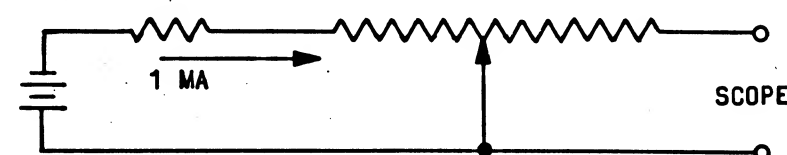
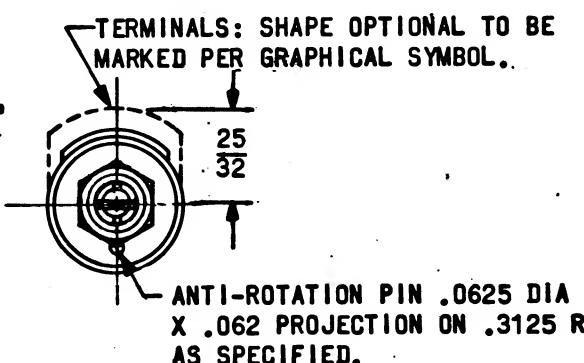
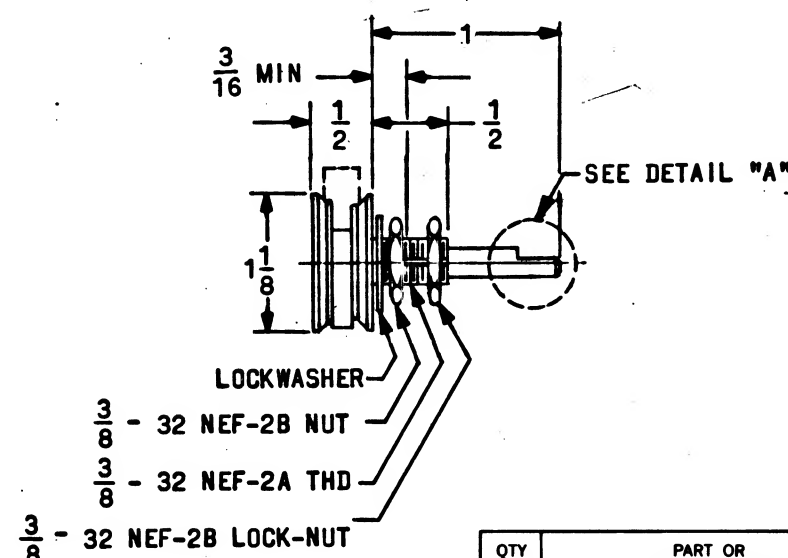
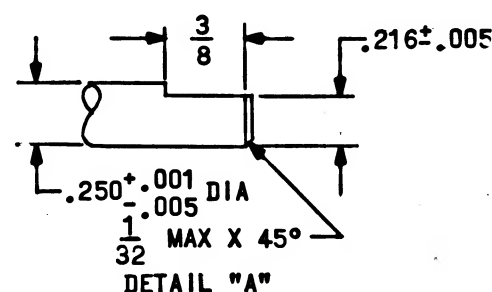
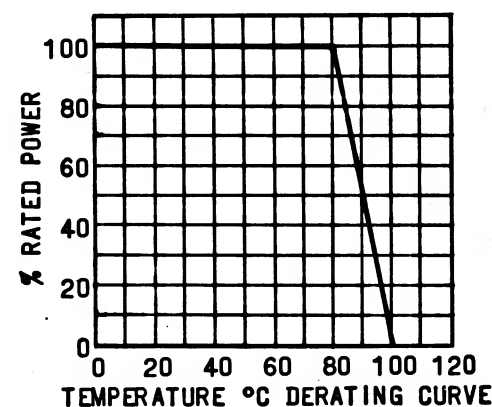


FIGURE 1
EQUIVALENT NOISE RESISTANCE



2
GRAPHICAL SYMBOL

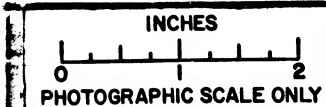
PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND-1002034 FOR THIS DRAWING.



FOR INFORMATION ONLY
CLASS B RELEASE TDR No. 04291

DATE
10/30/63

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS.		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN: [Signature] DATE: 10/27/63 CHECKED: Paul Remde 7/27/63 APPROVAL: [Signature] 7 OCT 63		RESISTOR, VARIABLE, WIREWOUND, 4 WATTS, 1-1/8" DIA	
NASA APPROVAL: [Signature] 10/27/63 MIT APPROVAL: [Signature] 10/27/63		SPECIFICATION CONTROL DRAWING NASA DRAWING NO. 1016153	
SCALE: NONE		WT	SHEET 1 OF 1



NOTICE - WHEN GOVERNMENT DRAWINGS SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPORTED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE PLEADED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

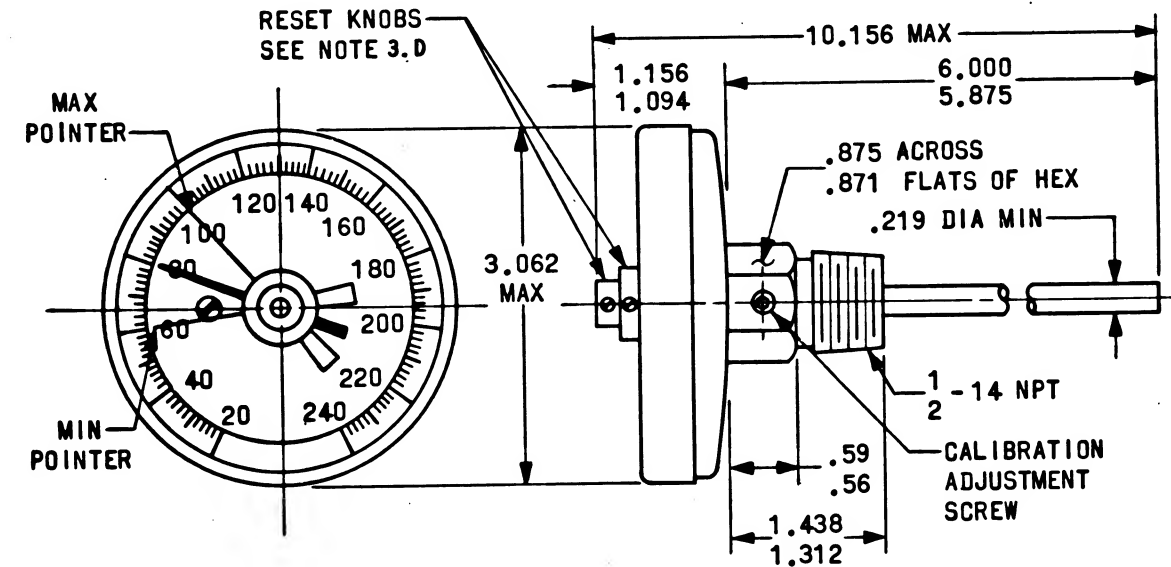
1. GENERAL:
 - A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
 - ~~B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.~~
2. INSPECTION AND ACCEPTANCE:
 - A. MECHANICAL REQUIREMENTS:
 - (1) RANGE +20°F TO +240°F
 - (2) DIAL SCALE MARKINGS SHALL BE SPACED AT 2° WITH MAJOR DIVISIONS EVERY 10° AND NUMBERED MARKINGS EVERY 20°
 - (3) CASE SHALL BE CRES.
 - ~~B. MARKING:
 - (1) PIECE: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
 - (2) PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER
DATE CODE OR DATE OF MANUFACTURE~~
3. DESIGN:
 - A. ACCURACY: 1% OF FULL SCALE
 - B. TEMPERATURE: UNIT SHALL WITHSTAND TEMPERATURES OF -25° F TO +260°F WITHOUT DAMAGE.
MANUFACTURERS PART NUMBER MAY APPEAR ON THE PART OR PACKAGE. ~~PER ND 1002019~~
 - C. UNIT TO BE FURNISHED WITHOUT WELL
 - D. UNIT SHALL BE EQUIPPED WITH TWO ADDITIONAL POINTERS CAPABLE OF BEING SET AT MAX AND MIN TEMP BY TEMP SENSITIVE POINTER. MANUAL RESET KNOBS SHALL RETURN MAX-MIN POINTERS TO PRESENT TEMP ABOUT UNIT POINTER.

NASA PART NUMBER	MANUFACTURER'S PART NUMBER
1016158-001	3A06

~~DATA SOURCE:~~
~~WEKSLER INSTRUMENT CORP.~~
~~FREEPORT, L.I., N.Y.~~
~~SUPPLIER DATA:~~
~~WEKSLER INSTRUMENT~~
~~CAT. NO. 3A09 W/MAX-MIN~~

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ± DO NOT SCALE THIS DRAWING MATERIAL SEE REQUIREMENTS HEAT TREATMENT NONE FINAL FINISH NONE APPLICATION
NEXT ASSY	USED ON	



QTY REQ	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
		LIST OF MATERIALS	
	MIT INSTRUMENTATION LAB CAMBRIDGE MASS 0497 DUE NO 7-027-63 CONTRACT 497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
	DRAWN Bender CHECKED Ed Foster APPROVAL J. V. W. Lane APPROVAL J. G. Gorman	THERMOMETER, MAX - MIN INDICATING	
	NASA APPROVAL MIT APPROVAL	SPECIFICATION CONTROL DRAWING CODE IDENT NO. SIZE C 1016158	
		SCALE NONE WT	SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREIN.

8519101

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED & UPGRADED TO CLASS A PER TDRR 21438	13 AUG 65	WJR CP
B	REVISED PER TDRR 27894	18 AUG 66	RJJ

REQUIREMENTS:

1. GENERAL:

A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.

B. ~~SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.~~

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- (1) RANGE +20°F TO +240°F
- (2) DIAL SCALE MARKINGS SHALL BE SPACED AT 2° WITH MAJOR DIVISIONS EVERY 10° AND NUMBERED MARKINGS EVERY 20°
- (3) CASE SHALL BE CRES.

B. MARKING:

(1) ~~PIECE: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.~~

(2) ~~PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:~~

~~SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER
DATE CODE OR DATE OF MANUFACTURE~~

3. DESIGN:

A. ACCURACY: 1% OF FULL SCALE

B. TEMPERATURE: UNIT SHALL WITHSTAND TEMPERATURES OF -25° F TO +260°F WITHOUT DAMAGE.

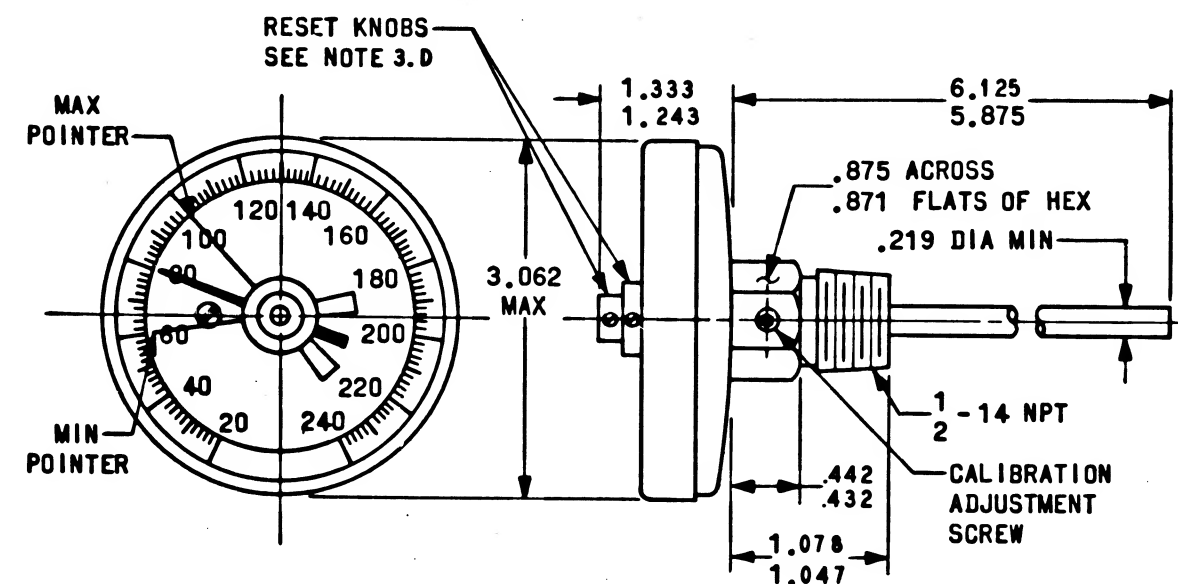
MANUFACTURERS PART NUMBER MAY APPEAR ON THE PART OR PACKAGE. ~~PER ND 1002018~~

C. UNIT TO BE FURNISHED WITHOUT WELL

D. UNIT SHALL BE EQUIPPED WITH TWO ADDITIONAL POINTERS CAPABLE OF BEING SET AT MAX AND MIN TEMP BY TEMP SENSITIVE POINTER. MANUAL RESET KNOBS SHALL RETURN MAX-MIN POINTERS TO PRESENT TEMP ABOUT UNIT POINTER.

NASA PART NUMBER	MANUFACTURER'S PART NUMBER
1016158-001	3A06

DATA SOURCE:
WEKSLER INSTRUMENT CORP.
FREEPORT, L.I., N.Y.
SUPPLIER DATA:
WEKSLER INSTRUMENT
CAT. NO. 3A06 W/MAX-MIN



PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
		LIST OF MATERIALS	
		MIT INSTRUMENTATION LAB CAMBRIDGE, MASS CONTRACT 497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
		DRAWN <i>Bender</i> 8 OCT 63 CHECKED <i>Ed Foster</i> 9 OCT 63 APPROVAL <i>G. V. W. P. 9 OCT 63</i> APPROVAL <i>J. G. 10/28/63</i>	THERMOMETER, MAX - MIN INDICATING
		NASA APPROVAL <i>11/1/63</i> MIT APPROVAL <i>11/1/63</i>	SPECIFICATION CONTROL DRAWING
		HEAT TREATMENT NONE	CODE IDENT NO. SIZE C 1016158
		FINAL FINISH NONE	SCALE NONE WT
		NEXT ASSY USED ON	SHEET 1 OF 1
		APPLICATION	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWING, SPECIFICATION, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON, OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO REPRODUCE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

8519101

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- RANGE +20°F TO +240°F
- DIAL SCALE MARKINGS SHALL BE SPACED AT 2° WITH MAJOR DIVISIONS EVERY 10° AND NUMBERED MARKINGS EVERY 20°
- CASE SHALL BE CRES PER MIL-S-5057

B. MARKING:

- PIECE: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER
DATE CODE OR DATE OF MANUFACTURE

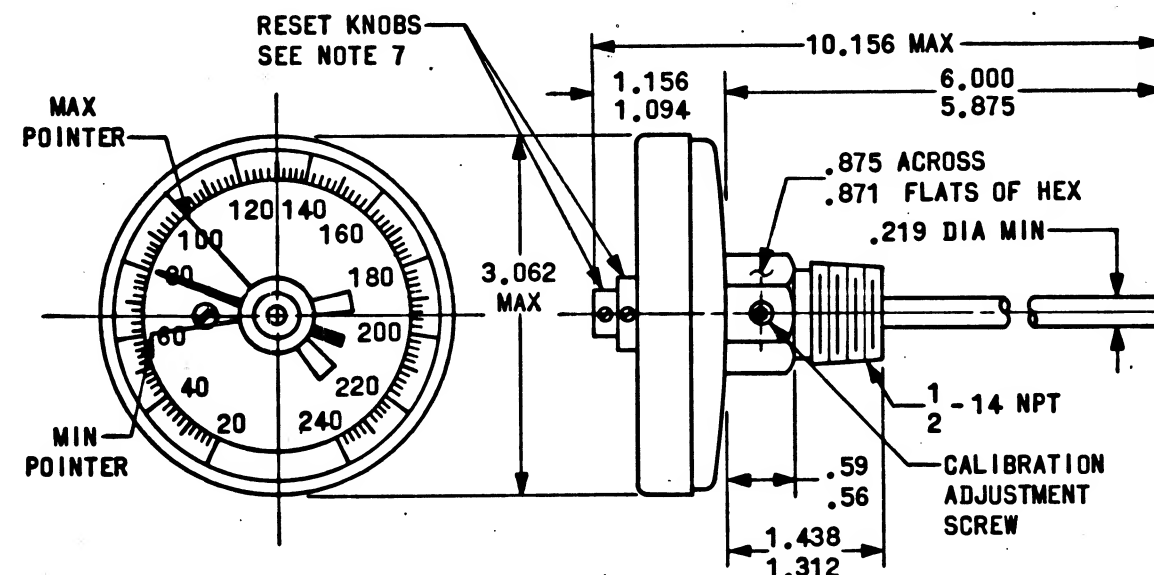
3. DESIGN:

- ACCURACY: 1% OF FULL SCALE
- TEMPERATURE: UNIT SHALL WITHSTAND TEMPERATURES OF -25° F TO +260°F WITHOUT DAMAGE.
MANUFACTURERS PART NUMBER MAY APPEAR ON THE PART OR PACKAGE PER ND 1002019
- UNIT TO BE FURNISHED WITHOUT WELL
- UNIT SHALL BE EQUIPPED WITH TWO ADDITIONAL POINTERS CAPABLE OF BEING SET AT MAX AND MIN TEMP BY TEMP SENSITIVE POINTER. MANUAL RESET KNOBS SHALL RETURN MAX-MIN POINTERS TO PRESENT TEMP ABOUT UNIT POINTER.

NASA PART NUMBER	MANUFACTURER'S PART NUMBER
1016158-001	3A06

DATA SOURCE:
WEKSLER INSTRUMENT CORP.
FREEPORT, L.I., N.Y.

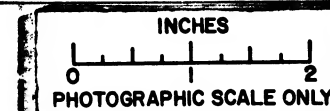
SUPPLIER DATA:
WEKSLER INSTRUMENT
CAT. NO. 3A09 W/MAX-MIN



PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
TOLERANCES ON	
FRACTIONS	DECIMALS ANGLES
±	± ±
DO NOT SCALE THIS DRAWING	
MATERIAL	
SEE REQUIREMENTS	
HEAT TREATMENT	
NONE	
FINAL FINISH	
NONE	
NEXT ASSY	USED ON
APPLICATION	

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS 02139 DWS NO 7-027-63 CONTRACT DATE 9 OCT 63		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Sender</i> CHECKED <i>Ed Foster</i> APPROVAL <i>J. V. W. Amos</i> APPROVAL <i>J. G. Hume</i>		THERMOMETER, MAX - MIN INDICATING	
NASA APPROVAL <i>W. L. K. 10/15/63</i> MIT APPROVAL <i>W. L. K. 10/15/63</i>		SPECIFICATION CONTROL DRAWING	
		CODE IDENT NO. SIZE C	NASA DRAWING NO. 1016158
		SCALE NONE WT	SHEET 1 OF 1



INCHES

0 1 2

PHOTOGRAPHIC SCALE ONLY

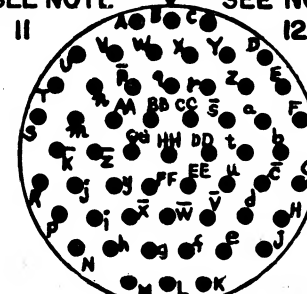
NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY LIABILITY WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

6519101

REVISIONS

SYM DESCRIPTION DATE APPROVAL

NASA PART NUMBER	θ DEGREES SEE NOTE 13	NO. CONTACTS & WIRE SIZE (REF)	SEA LEVEL VOLTAGE	STANDARD CONTACT ARRANGEMENT	SCINTILLA DIV. IDENTIFICATION
1016159-550	0	55 = 20 AWG	500 ACRMS	SEE NOTE II	PT01SE-22-55P (SR)
-551	30				PW
-552	142				PX
-553	226				PY
-554	314				PZ



FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 84291 DATE 10/31/63

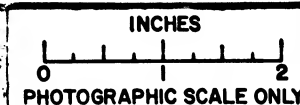
NOTES:

- 11 INSERT SHOWN IN POSITION "X" FACE VIEW ($\theta = 142^\circ$)
- 12 BARS PLACED OVER LETTERS ARE FOR REFERENCE ONLY AND SIGNIFY LOWER CASE.
- 13 θ = NUMBER OF DEGREES INSERT TO BE ROTATED FROM NORMAL POSITION IN A CLOCKWISE DIRECTION FOR ALTERNATE POSITIONS.

MASTER

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		— ± — ± — ± —
		DO NOT SCALE THIS DRAWING
		MATERIAL
		HEAT TREATMENT
		FINAL FINISH
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS CONTRACT 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>J. Parks</i> DATE 8 OCT 63 CHECKED <i>P. Rando</i> 9 OCT 63 APPROVAL <i>J. Lewis</i> 10 OCT 63		CONNECTOR-PLUG, ELECTRICAL, CABLE CONNECTING, PT01SE - 22-55P	
NASA APPROVAL <i>W. L. 11/1/63</i> MIT APPROVAL <i>W. L. 11/1/63</i>		CODE IDENT NO. SIZE C	NASA DRAWING NO. 1016159
SCALE		WT	SHEET 2 OF 2

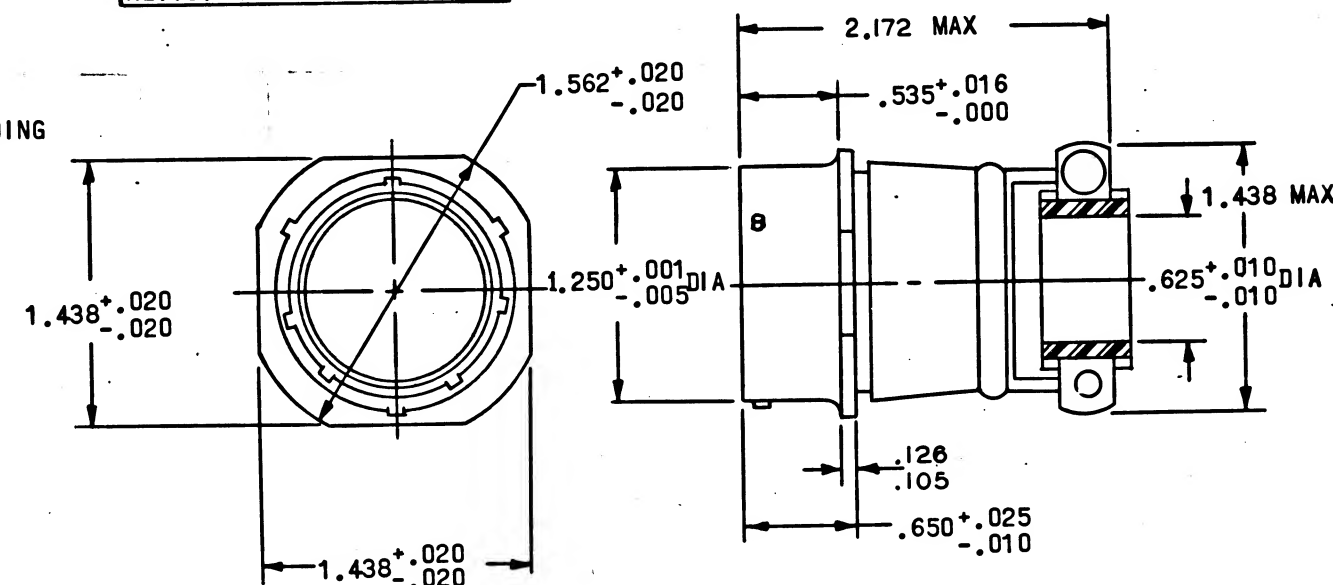


REQUIREMENTS:

1. GENERAL:
 - A. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
 - B. THESE CONNECTION SHALL CONFORM TO THE REQUIREMENTS OF MIL-C-26482 WITH THE PARTICULAR REQUIREMENTS LISTED BELOW AS REFERENCE INFORMATION.
 - C. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
 - D. UNITS SHALL MEET ALL QUALIFICATION REQUIREMENTS OF ND 1002052 UNLESS MODIFIED BY NOTE 2.
 - E. UNITS SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL AND PART NUMBER. EACH CONTAINER SHALL INCLUDE THE NASA DRAWING AND DASH NUMBER PLUS THE REVISION LETTER.
2. ACCEPTANCE AND INSPECTION REQUIREMENTS:
 - A. ELECTRICAL CHARACTERISTICS (IN ACCORDANCE WITH THE MILITARY SPECIFICATION):
 - (1) DIELECTRIC WITHSTANDING VOLTAGE: 1500 VRMS.
 - (2) INSULATION RESISTANCE: 5000 MEGOHMS MINIMUM.
 - (3) INSULATION RESISTANCE (HIGH TEMPERATURE): 50 MEGOHMS MINIMUM.
 - (4) CONTACT RESISTANCE: 50 MILLIVOLTS NOMINAL MAXIMUM.
3. DESIGN REQUIREMENTS:
 - A. OPERATING LIFE: SEE RELIABILITY NOTE 3D.
 - B. STORAGE LIFE: 1 YEAR WITHOUT GROMMET DETERIORATION.
 - C. CONSTRUCTION:
 - (1) TYPE CONNECTOR: ENVIRONMENT SEALED BY A GROMMET AND INSERT WITH A STRAIN RELIEF CLAMP. SOLID SHELL WITH POSITIVE INSERT RETENTION.
 - (2) TYPE CONTACT: CRIMP CONTACTS
 - (3) NUMBER AND SIZE OF CONTACTS: SEE TABLE I.
 - (4) COUPLING: BAYONET.
 - D. RELIABILITY: CONNECTORS SHALL BE CAPABLE OF WITHSTANDING 500 CYCLES OF ENGAGEMENT AND DISENGAGEMENT WITHOUT ELECTRICAL OR MECHANICAL FAILURE.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

A	-
SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	



FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04296 DATE 10/30/63

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON		MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. CONTRACT 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
FRACTIONS	DECIMALS	ANGLES	DRAWN <i>Splane</i>	DATE <i>7 OCT 63</i>	CONNECTOR-PLUG, ELECTRICAL, CABLE CONNECTING, PT01SE 20-XXP (SR)
+	+	+	CHECKED <i>Ed Foster</i>	DATE <i>9 OCT 63</i>	
-	-	-	APPROVAL <i>Ed Foster</i>	DATE <i>10/28/63</i>	
DO NOT SCALE THIS DRAWING			NASA APPROVAL <i>W. K. ...</i>		SPECIFICATION CONTROL DRAWING
MATERIAL			MIT APPROVAL <i>W. K. ...</i>		
NEXT ASSY	USED ON	CONTRACT	CODE IDENT NO.	SIZE	1016160
APPLICATION			SCALE	SHEET 1 of 2	

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
- THESE CONNECTION SHALL CONFORM TO THE REQUIREMENTS OF MIL-C-26482 WITH THE PARTICULAR REQUIREMENTS LISTED BELOW AS REFERENCE INFORMATION.
- SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
- UNITS SHALL MEET ALL QUALIFICATION REQUIREMENTS OF ND 1002052 UNLESS MODIFIED BY NOTE 2.
- UNITS SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL AND PART NUMBER. EACH CONTAINER SHALL INCLUDE THE NASA DRAWING AND DASH NUMBER PLUS THE REVISION LETTER, ALSO THE ELASTOMER CURE DATE.

2. ACCEPTANCE AND INSPECTION REQUIREMENTS:

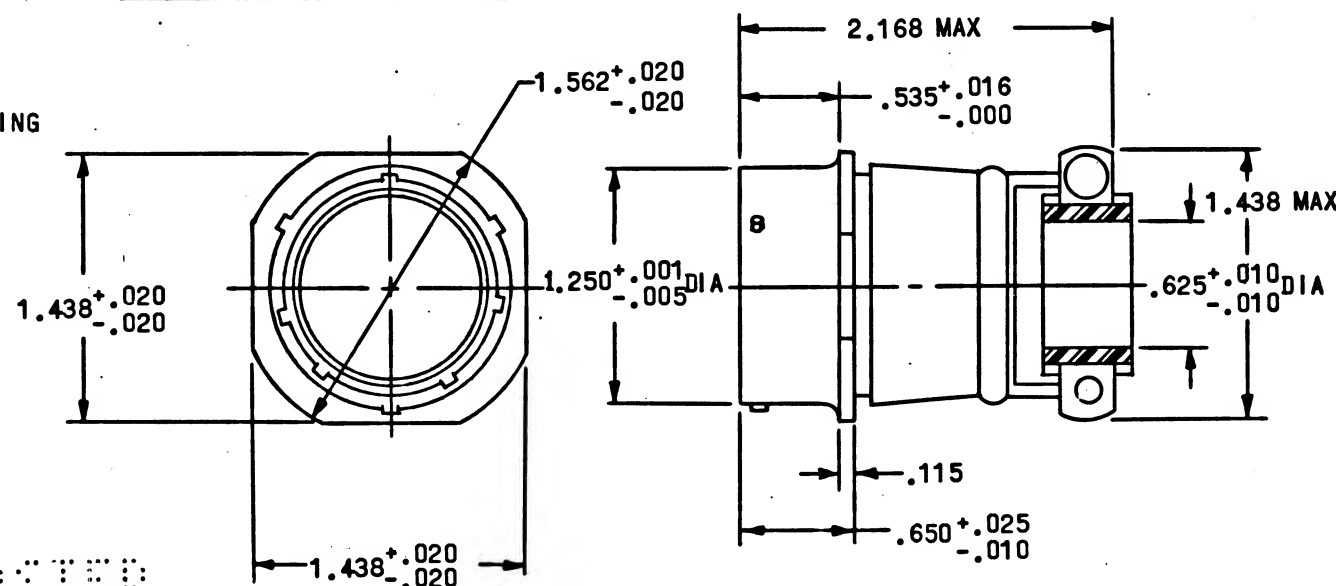
- ELECTRICAL CHARACTERISTICS (IN ACCORDANCE WITH THE MILITARY SPECIFICATION):
 - DIELECTRIC WITHSTANDING VOLTAGE: 1500 VRMS.
 - INSULATION RESISTANCE: 5000 MEGOHMS MINIMUM.
 - INSULATION RESISTANCE (HIGH TEMPERATURE): 50 MEGOHMS MINIMUM.
 - CONTACT RESISTANCE: 50 MILLIVOLTS NOMINAL MAXIMUM.

3. DESIGN REQUIREMENTS:

- OPERATING LIFE: SEE RELIABILITY NOTE 3D.
- STORAGE LIFE: 1 YEAR WITHOUT GROMMET DETERIORATION.
- CONSTRUCTION:
 - TYPE CONNECTOR: ENVIRONMENT SEALED BY A GROMMET AND INSERT WITH A STRAIN RELIEF CLAMP. SOLID SHELL WITH POSITIVE INSERT RETENTION.
 - TYPE CONTACT: CRIMP CONTACTS
 - NUMBER AND SIZE OF CONTACTS: SEE TABLE I.
 - COUPLING: BAYONET.
- RELIABILITY: CONNECTORS SHALL BE CAPABLE OF WITHSTANDING 500 CYCLES OF ENGAGEMENT AND DISENGAGEMENT WITHOUT ELECTRICAL OR MECHANICAL FAILURE.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

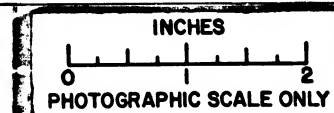
SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	



FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04291 DATE 10/24/63

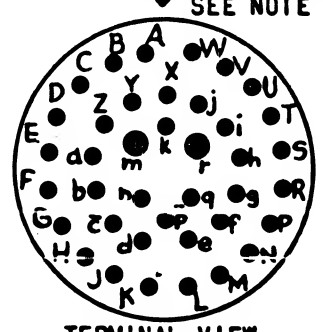
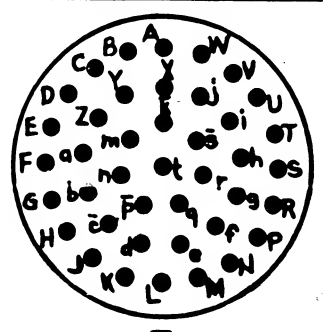
		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON		MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. CONTRACT 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
		FRACTIONS	DECIMALS	ANGLES	DRAWN <i>Spence</i>	DATE <i>7 OCT 63</i>	CONNECTOR-PLUG, ELECTRICAL, CABLE CONNECTING, PT01SE 20-XXP (SR)
		+	+	+	CHECKED <i>Ed Foster</i>	DATE <i>9 OCT 63</i>	
		-	-	-	APPROVAL <i>Freeman</i>	DATE <i>10/28/63</i>	
		DO NOT SCALE THIS DRAWING			NASA APPROVAL <i>W. H. ...</i>		CODE IDENT NO.
		MATERIAL			MIT APPROVAL <i>W. H. ...</i>		SIZE
NEXT ASSY	USED ON				SCALE		1016160
APPLICATION		CONTRACT					SHEET 1 OF 2



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

0919101

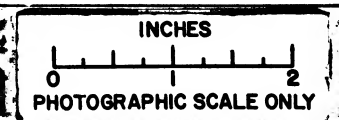
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL

NASA PART NUMBER	SEE NOTE 6	NO. CONTACTS & WIRE SIZE (REF)	SEA LEVEL VOLTAGE	STANDARD CONTACT ARRANGEMENT SEE NOTE 4	SCINTILLA DIV. IDENTIFICATION
1016160-390	0°	37 = 20 AWG 2#16 AWG	500 ACRMS		PT01SE-20-39P (SR)
-391	63°				PW
-392	144°				PX
-393	252°				PY
-394	333°				PZ
1016160-410	0°	41 = 20 AWG	500 ACRMS		PT01SE-20-41P (SR)
-411	45°				PW
-412	126°				PX
-413	225°				PY

FOR INFORMATION ONLY
CLASS B RELEASE TDR No. 04291 DATE 10/24/63

- 4. INSERT ARRANGEMENT IS SHOWN IN NORMAL POSITION (0 = 0°)
- 5. BARS PLACED OVER LETTERS ARE FOR REFERENCE ONLY AND SIGNIFY LOWER CASE.
- 6. 0 = NUMBER OF DEGREES INSERT TO BE ROTATED FROM NORMAL POSITION IN A CLOCKWISE DIRECTION FOR ALTERNATE POSITIONS.

QTY REQD		PART OR IDENTIFYING NO.		NOMENCLATURE OR DESCRIPTION		FINO NO.
LIST OF MATERIALS						
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. CONTRACT 9-477				MANNED SPACECRAFT CENTER HOUSTON, TEXAS		
DRAWN <i>Splane</i> DATE 7 OCT 63 CHECKED <i>Ed Foster</i> 9 OCT 63 APPROVAL <i>William Newman</i> 10 OCT 63				CONNECTOR-PLUG, ELECTRICAL, CABLE CONNECTING, PT01SE 20-XXP (SR)		
NASA APPROVAL <i>William Newman</i> 10/16/63				SPECIFICATION CONTROL DRAWING		
MIT APPROVAL <i>William Newman</i> 10/16/63				CODE IDENT NO.	SIZE	NASA DRAWING NO.
				C	C	1016160
SCALE				WT	SHEET 2 OF 2	



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFIRMING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- THESE CONNECTORS SHALL CONFORM TO THE REQUIREMENTS OF MIL-C-26482 EXCEPT END BELL AND WITH THE PARTICULAR REQUIREMENTS LISTED BELOW AS REFERENCE INFORMATION.
- SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
- UNITS SHALL BE CAPABLE OF MEETING ALL QUALIFICATION REQUIREMENTS SPECIFIED IN ND 1002052 UNLESS MODIFIED OR AMENDED BY THE INSPECTION AND ACCEPTANCE REQUIREMENTS LISTED BELOW.
- CONTACTS SUPPLIED SEPARATELY IN A PLIOFILM BAG WITH 10% SPARES.
- CONTACTS SHALL BE PER ALL REQUIREMENTS OF MIL-C-23216 AND WIRE WELL AREA PER MS 3190.

2. INSPECTION AND ACCEPTANCE:

A. ELECTRICAL REQUIREMENTS:

- ELECTRICAL CHARACTERISTICS (IN ACCORDANCE WITH THE MILITARY SPECIFICATION):

- DIELECTRIC WITHSTANDING VOLTAGE: 1500 VRMS.
- INSULATION RESISTANCE: 5000 MEGOHMS MINIMUM (500 VDC)

B. MECHANICAL REQUIREMENTS:

- MARKING: UNITS SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE NASA DWG NUMBER AND REVISION LETTER, AND THE MANUFACTURER'S NAME AND/OR SYMBOL. THE MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE. EACH CONTAINER SHALL INCLUDE THE NASA DRAWING AND DASH NUMBER PLUS THE REVISION LETTER.

3. DESIGN REQUIREMENTS:

A. OPERATING LIFE: SEE RELIABILITY NOTE.

B. STORAGE LIFE: 1 YEAR WITHOUT GROMMET DETERIORATION.

C. CONSTRUCTION:

- TYPE CONNECTOR: ENVIRONMENT SEALED BY A GROMMET AND INSERT WITH A STRAIN RELIEF CLAMP, SOLID SHELL AND POSITIVE INSERT RETENTION.
- TYPE CONTACT: CRIMP CONTACTS PER MS3193 PINS
- NUMBER AND SIZE OF CONTACTS: SEE TABLE I.
- COUPLING: BAYONET.
- SHELL: ALUMINUM ALLOY, PER QQ-A-591, FINISH PER QQ-P-416.

D. RELIABILITY: CONNECTORS SHALL BE CAPABLE OF WITHSTANDING 500 CYCLES OF ENGAGEMENT AND DISENGAGEMENT WITHOUT ELECTRICAL OR MECHANICAL FAILURE.

E. ELECTRICAL:

- INSULATION RESISTANCE (+125°C): 50 MEGOHMS MINIMUM. (500 VDC)
- CONTACT RESISTANCE: 50 MILLIVOLTS MAXIMUM AT RATED CURRENT.
- CONTACT CURRENT RATING: 7.5 AMPERES.
- VOLTAGE RATING: 700 VDC AND 500 VRMS
- INSERT ARRANGEMENT: PER MS33713-32.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

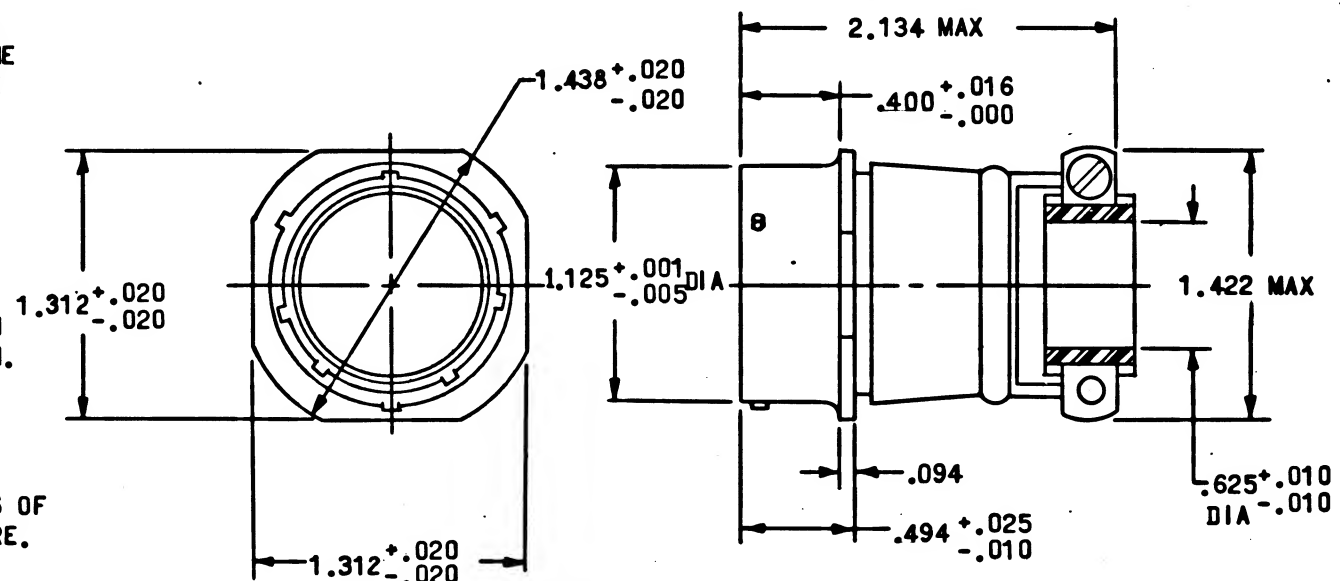
A	-
SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± ±.005 ±1°
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		NONE
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>P. Peterson</i> DATE 28 OCT 63 CHECKED <i>Ed F. Felt</i> 29 OCT 63 APPROVAL <i>J. J. J. J.</i> 29 OCT 63 APPROVAL <i>J. J. J. J.</i> 11/1/63		CONNECTOR - PLUG, ELECTRICAL, CABLE CONNECTING, PT01 CE-18-32P (SR) SPECIFICATION CONTROL DRAWING	
NASA APPROVAL <i>[Signature]</i> MIT APPROVAL <i>[Signature]</i>		CODE IDENT NO. SIZE C	NASA DRAWING NO. 1016161
SCALE NONE		WT	SHEET 1 OF 2

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 641036 DATE 11/1/63



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFIRMING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- THESE CONNECTORS SHALL CONFORM TO THE REQUIREMENTS OF MIL-C-26482 EXCEPT END BELL AND WITH THE PARTICULAR REQUIREMENTS LISTED BELOW AS REFERENCE INFORMATION.
- SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN MIL-Q-9858.
- UNITS SHALL BE CAPABLE OF MEETING ALL QUALIFICATION REQUIREMENTS SPECIFIED IN ND 1002052 UNLESS MODIFIED OR AMENDED BY THE INSPECTION AND ACCEPTANCE REQUIREMENTS LISTED BELOW.
- CONTACTS SUPPLIED SEPARATELY IN A PLIOFILM BAG WITH 10% SPARES.
- CONTACTS SHALL BE PER ALL REQUIREMENTS OF MIL-C-23216 AND WIRE WELL AREA PER MS 3190.

2. INSPECTION AND ACCEPTANCE:

A. ELECTRICAL REQUIREMENTS:

- ELECTRICAL CHARACTERISTICS (IN ACCORDANCE WITH THE MILITARY SPECIFICATION):
 - DIELECTRIC WITHSTANDING VOLTAGE: 1500 VRMS.
 - INSULATION RESISTANCE: 5000 MEGOHMS MINIMUM (500 VDC)

B. MECHANICAL REQUIREMENTS:

- MARKING: UNITS SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE NASA DWG NUMBER, DASH NUMBER, AND THE MANUFACTURER'S NAME AND/OR SYMBOL. THE MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE. EACH CONTAINER SHALL INCLUDE THE NASA DRAWING AND DASH NUMBER PLUS THE REVISION LETTER.

3. DESIGN REQUIREMENTS:

A. OPERATING LIFE: SEE RELIABILITY NOTE.

B. STORAGE LIFE: 1 YEAR WITHOUT GROMMET DETERIORATION.

C. CONSTRUCTION:

- TYPE CONNECTOR: ENVIRONMENT SEALED BY A GROMMET AND INSERT WITH A STRAIN RELIEF CLAMP, SOLID SHELL AND POSITIVE INSERT RETENTION.
- TYPE CONTACT: CRIMP CONTACTS PER MS3192 PINS
- NUMBER AND SIZE OF CONTACTS: SEE TABLE I.
- COUPLING: BAYONET.
- SHELL: ALUMINUM ALLOY, PER QQ-A-591, FINISH PER QQ-P-416.

D. RELIABILITY: CONNECTORS SHALL BE CAPABLE OF WITHSTANDING 500 CYCLES OF ENGAGEMENT AND DISENGAGEMENT WITHOUT ELECTRICAL OR MECHANICAL FAILURE.

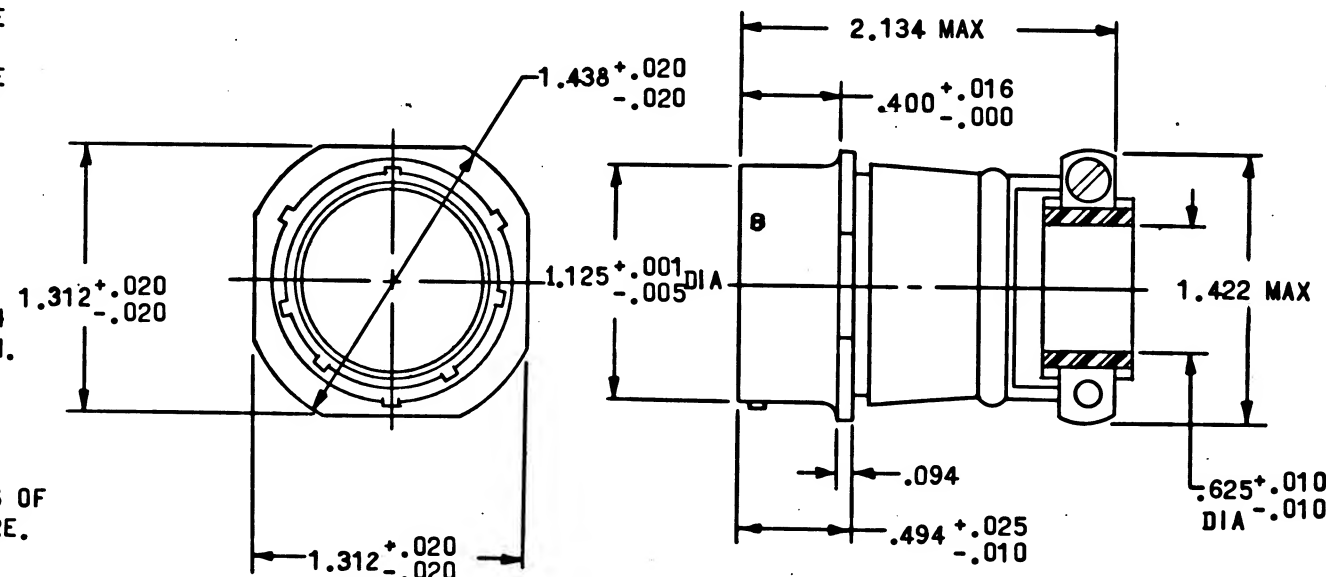
E. ELECTRICAL:

- INSULATION RESISTANCE (+125°C): 50 MEGOHMS MINIMUM. (500 VDC)
- CONTACT RESISTANCE: 50 MILLIVOLTS MAXIMUM AT RATED CURRENT.
- CONTACT CURRENT RATING: 7.5 AMPERES.
- VOLTAGE RATING: 700 VDC AND 500 VRMS
- INSERT ARRANGEMENT: PER MS33713-32.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

1919101

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	CHANGE IN ACCORDANCE WITH CM-196634 PER TORR 7763	7-APR-64	J.B. E.F.
B	REVISED AND UPGRADED TO CLASS A PER TDRR 19959	11-JUN-65	X.3.4. V.M.



QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Peterman</i> DATE 28 OCT 63 CHECKED <i>Ed Foster</i> 29 OCT 63 APPROVAL <i>J. Lewis</i> 29 OCT 63 APPROVAL <i>E. Goldman</i> 11/1/63		CONNECTOR - PLUG, ELECTRICAL, CABLE CONNECTING, PT01 CE-18-32P (SR)	
NASA APPROVAL <i>[Signature]</i> MIT APPROVAL <i>[Signature]</i>		CODE IDENT NO. 80230 SCALE NONE	NASA DRAWING NO. 1016161 SHEET 1 OF 2

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

M 8 1919101

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	UPGRADED TO CLASS A PER TDDR 19959	11 JUN-65	K. J. W. V. M.

TABLE 1

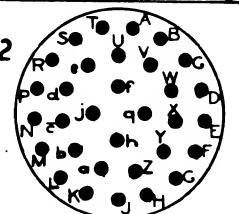
NASA PART NUMBER	θ DEGREES SEE NOTE 3	NO. CONTACTS & WIRE SIZE (REF)	SEA LEVEL VOLTAGE	SEE NOTE 1	STANDARD CONTACT ARRANGEMENT	SCINTILLA DIV. IDENTIFICATION	FINISH & COLOR
1016161 -320	0	32 = 20 AWG	500 ACRMS	SEE NOTE 2		PT01CE-18-32P- (SR)	CADMIUM PLATE DULL OLIVE DRAB
-321	85					PW	
-322	138					PX	
-323	222					PY	
-324	265					PZ	

TABLE II

OPERATING VOLTAGE	
VAC	(RMS)
SEA LEVEL	70,000 FEET
500	125

TABLE III

CONTACT SIZE	TEST CURRENT (AMPS)	POTENTIAL DROP (MV)	POTENTIAL DROP AFTER CORROSION (MV)
20	7.5	20	35

TABLE IV

CONTACT SIZE	MAXIMUM AMPERES
20	7.5

TABLE V

CONTACT SIZE	AXIAL LOAD (MIN) (POUNDS)
20	7

NOTES:

1. INSERT SHOWN IN POSITION "N" - TERMINAL VIEW (θ = 0°).
2. BARS PLACED OVER LETTERS ARE FOR REFERENCE ONLY AND SIGNIFY LOWER CASE.
3. θ = NUMBER OF DEGREES INSERT TO BE ROTATED FROM NORMAL POSITION IN A CLOCKWISE DIRECTION FOR ALTERNATE POSITIONS.

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		
TOLERANCES ON	FRACTIONS	DECIMALS ANGLES
	±	± ±
DO NOT SCALE THIS DRAWING		
MATERIAL		
HEAT TREATMENT		
FINAL FINISH		

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS DWC NO Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Ed Foster</i> DATE 28 OCT 63 CHECKED <i>Ed Foster</i> 29 OCT 63 APPROVAL <i>J. Lewis</i> 29 OCT 63 APPROVAL <i>L. Giedeman</i> 11/1/63		CONNECTOR - PLUG, ELECTRICAL, CABLE CONNECTING, PT01 CE-18-32P (SR) SPECIFICATION CONTROL DRAWING	
NASA APPROVAL <i>[Signature]</i> MIT APPROVAL <i>[Signature]</i>		CODE IDENT NO. 80230 SCALE NONE	SIZE C WT SHEET 2 OF 2

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- THESE CONNECTORS SHALL CONFORM TO THE REQUIREMENTS OF MIL-C-26482 EXCEPT END BELL AND WITH THE PARTICULAR REQUIREMENTS LISTED BELOW AS REFERENCE INFORMATION.
- SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
- UNITS SHALL BE CAPABLE OF MEETING ALL QUALIFICATION REQUIREMENTS SPECIFIED IN ND 1002052 UNLESS MODIFIED OR AMENDED BY THE INSPECTION AND ACCEPTANCE REQUIREMENTS LISTED BELOW.
- CONTACTS SUPPLIED SEPARATELY IN A PLIOFILM BAG WITH 10% SPARES.
- CONTACTS SHALL BE PER ALL REQUIREMENTS OF MIL-C-23216 AND WIRE WELL AREA PER MS 3190.

2. INSPECTION AND ACCEPTANCE:

A. ELECTRICAL REQUIREMENTS:

- ELECTRICAL CHARACTERISTICS (IN ACCORDANCE WITH THE MILITARY SPECIFICATION):
 - DIELECTRIC WITHSTANDING VOLTAGE: 1500 VRMS.
 - INSULATION RESISTANCE: 5000 MEGOHMS MINIMUM (500 VDC)

B. MECHANICAL REQUIREMENTS:

- MARKING: UNITS SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE NASA DWG NUMBER AND REVISION LETTER, AND THE MANUFACTURER'S NAME AND/OR SYMBOL. THE MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE. EACH CONTAINER SHALL INCLUDE THE NASA DRAWING AND DASH NUMBER PLUS THE REVISION LETTER.

3. DESIGN REQUIREMENTS:

A. OPERATING LIFE: SEE RELIABILITY NOTE.

B. STORAGE LIFE: 1 YEAR WITHOUT GROMMET DETERIORATION.

C. CONSTRUCTION:

- TYPE CONNECTOR: ENVIRONMENT SEALED BY A GROMMET AND INSERT WITH A STRAIN RELIEF CLAMP, SOLID SHELL AND POSITIVE INSERT RETENTION.
- TYPE CONTACT: CRIMP CONTACTS PER MS3193 PINS
- NUMBER AND SIZE OF CONTACTS: SEE TABLE I.
- COUPLING: BAYONET.
- SHELL: ALUMINUM ALLOY, PER QQ-A-591, FINISH PER QQ-P-416.

D. RELIABILITY: CONNECTORS SHALL BE CAPABLE OF WITHSTANDING 500 CYCLES OF ENGAGEMENT AND DISENGAGEMENT WITHOUT ELECTRICAL OR MECHANICAL FAILURE.

E. ELECTRICAL:

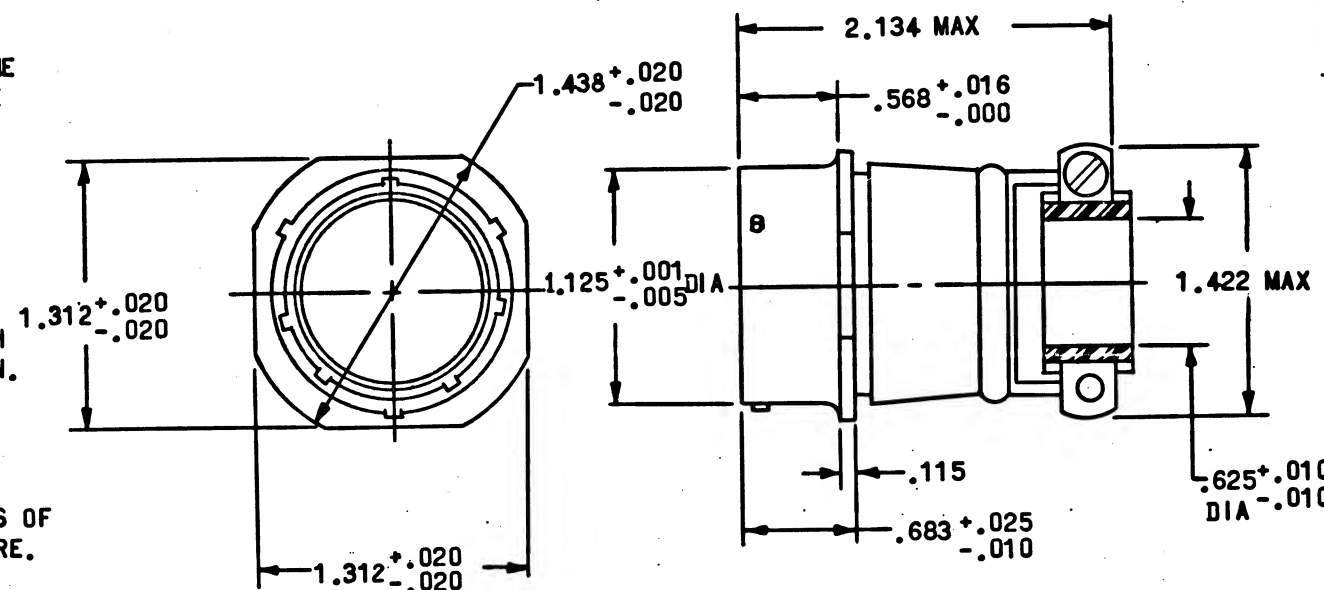
- INSULATION RESISTANCE (+125°C): 50 MEGOHMS MINIMUM. (500 VDC)
- CONTACT RESISTANCE: 50 MILLIVOLTS MAXIMUM AT RATED CURRENT.
- CONTACT CURRENT RATING: 7.5 AMPERES.
- VOLTAGE RATING: 700 VDC AND 500 VRMS
- INSERT ARRANGEMENT: PER MS33713-32.

1919101

REVISIONS
SYM DESCRIPTION DATE APPROVAL

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04436 DATE 11/03



SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLE ± ± .005 ± 1°
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
NEXT ASSY	USED ON	FINAL FINISH
APPLICATION		NONE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>P. Peterson</i> DATE 28 OCT 63 CHECKED <i>Ed F. Felt</i> 29 OCT 63 APPROVAL <i>J. Jones</i> 29 OCT 63 APPROVAL <i>L. Friedman</i> 11/1/63		CONNECTOR - PLUG, ELECTRICAL, CABLE CONNECTING, PT01 CE-18-32P (SR) SPECIFICATION CONTROL DRAWING	
NASA APPROVAL <i>[Signature]</i> MIT APPROVAL <i>[Signature]</i>		CODE IDENT NO. C SIZE C	NASA DRAWING NO. 1016161
SCALE NONE		WT	SHEET 1 OF 2

PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING.

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

TABLE 1

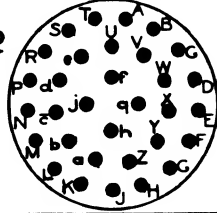
NASA PART NUMBER	θ DEGREES SEE NOTE 3	NO. CONTACTS & WIRE SIZE (REF)	SEA LEVEL VOLTAGE	SEE NOTE 1	STANDARD CONTACT ARRANGEMENT	SCINTILLA DIV. IDENTIFICATION	FINISH & COLOR
1016161 -320	0	32 = 20 AWG	500 ACRMS	SEE NOTE 2		PT01CE-18-32P- (SR)	CADMIUM PLATE DULL OLIVE DRAB
-321	85					PW	
-322	138					PX	
-323	222					PY	
-324	265					PZ	

TABLE II

OPERATING VOLTAGE	
VAC	(RMS)
SEA LEVEL	70,000 FEET
500	125

TABLE III

CONTACT SIZE	TEST CURRENT (AMPS)	POTENTIAL DROP (MV)	POTENTIAL DROP AFTER CORROSION (MV)
20	7.5	20	35

TABLE IV

CONTACT SIZE	MAXIMUM AMPERES
20	7.5

TABLE V

CONTACT SIZE	AXIAL LOAD (MIN) (POUNDS)
20	7

NOTES:

1. INSERT SHOWN IN POSITION "N" - TERMINAL VIEW ($\theta = 0^\circ$).
2. BARS PLACED OVER LETTERS ARE FOR REFERENCE ONLY AND SIGNIFY LOWER CASE.
3. θ = NUMBER OF DEGREES INSERT TO BE ROTATED FROM NORMAL POSITION IN A CLOCKWISE DIRECTION FOR ALTERNATE POSITIONS.

MASTER

1919101

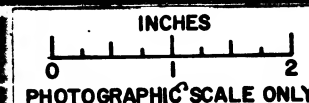
REVISIONS

SYM DESCRIPTION DATE APPROVAL

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04436 DATE 11/1/63

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Patterson</i> DATE 28 OCT 63 CHECKED <i>Ed Foster</i> 29 OCT 63 APPROVAL <i>J. Lewis</i> 29 OCT 63 APPROVAL <i>L. Gidman</i> 11/1/63		CONNECTOR - PLUG, ELECTRICAL, CABLE CONNECTING, PT01 CE-18-32P (SR) SPECIFICATION CONTROL DRAWING	
NASA APPROVAL <i>[Signature]</i> MIT APPROVAL <i>[Signature]</i>		CODE IDENT NO. SIZE C	NASA DRAWING NO. 1016161
SCALE NONE		WT	SHEET 2 OF 2



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

- CONTACT: BERYLLIUM COPPER.
- CONTACT SLEEVE: BRASS.
- INSULATOR: NYLON (DUPONT ZYTEL).

(2) FINISH:

- CONTACT: SILVER AND GOLD PLATED.
- CONTACT SLEEVE: SILVER AND GOLD PLATED.

(3) DIMENSIONS:

- IN PICTURE.

(4) MARKING:

- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION: PER MIL-STD-129:

SUPPLIER'S NAME.

NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.

SUPPLIER'S LOT OR SERIAL NUMBER.

DATE CODE, OR DATE OF MANUFACTURE.

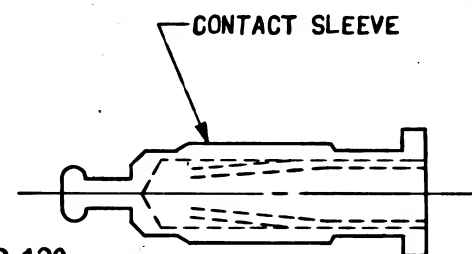
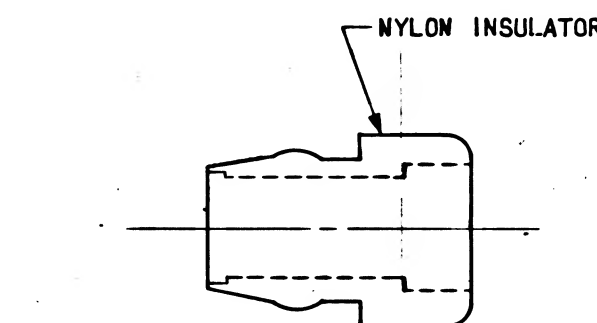
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

APPLICATION DATA (FOR REFERENCE):

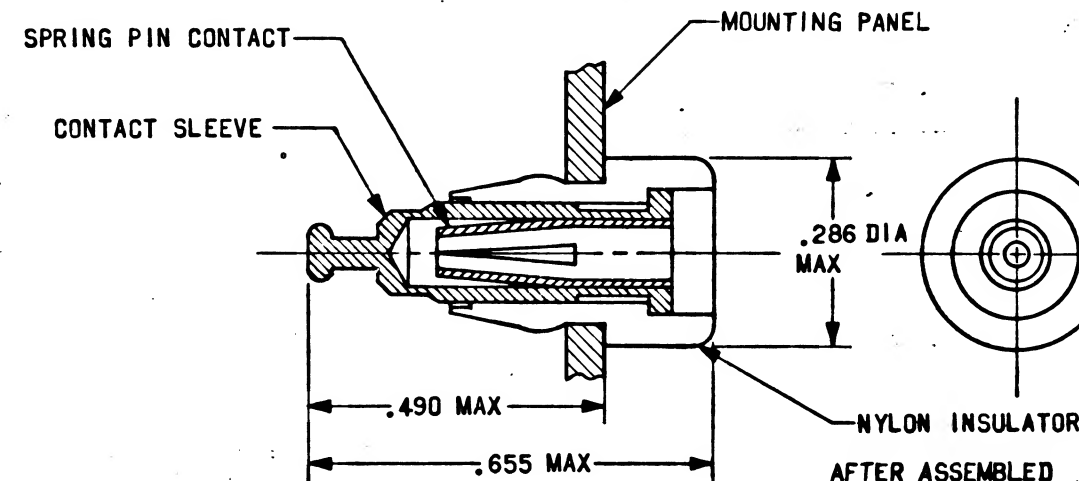
- PRESS INSULATOR INTO .219/.217 DIA. MOUNTING HOLE. SEAT CONTACT ASSEMBLY IN INSULATOR.
- RANGE OF ACCEPTABLE PANEL THICKNESS: .031-.093.
- FOR USE WITH STANDARD .081/.079 TEST PROBE.
- CONTACT RESISTANCE (AT ROOM TEMPERATURE, WITH STANDARD .080 DIA. TEST PROD): LESS THAN .0015 OHM.
- CAPACITANCE TO GROUND (.052 THICK PANEL): 3MMFD.
- DIELECTRIC: SHALL WITHSTAND 10,000 VOLTS DC, FRONT OF JACK TO .052 THICK PANEL.

NASA PART NUMBER	INSULATOR COLOR	RAYTHEON (REF) CATALOG ITEM
1016166-001	NATURAL	TJ-400N
-002	YELLOW	TJ-401Y
-003	BROWN	TJ-402B
-004	RED	TJ-403R
-005	ORANGE	TJ-404OR
-006	BLACK	TJ-405BL
-007	GREEN	TJ-406G
-008	BLUE	TJ-407MB
-009	WHITE	TJ-408W

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.



BEFORE ASSEMBLED



AFTER ASSEMBLED

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04291 DATE 10/30/62

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS CONTRACT 457		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <u>Bender</u> DATE <u>7 OCT 63</u> CHECKED <u>Ed Foster</u> DATE <u>9 OCT 63</u> APPROVAL <u>L. Goodman</u> DATE <u>9 OCT 63</u>		JACK - TEST POINT, PRESS FIT, FIXED	
SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		CODE IDENT NO.	NASA DRAWING NO.
MATERIAL		C	1016166
FINAL FINISH NONE		SCALE NONE	WT
MIT APPROVAL <u>W. K. Hoff</u> DATE <u>30 OCT 63</u>		SHEET 1 OF 1	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REQUIREMENTS:

1. GENERAL:
 - A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
 - B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
2. INSPECTION AND ACCEPTANCE:
 - A. MECHANICAL REQUIREMENTS:
 - (1) MATERIAL:
 - a. CONTACT: BERYLLIUM COPPER.
 - b. CONTACT SLEEVE: BRASS.
 - c. INSULATOR: NYLON (DUPONT ZYTEL).
 - (2) FINISH:
 - a. CONTACT: SILVER AND GOLD PLATED.
 - b. CONTACT SLEEVE: SILVER AND GOLD PLATED.
 - (3) DIMENSIONS:
 - a. IN PICTURE.
 - (4) MARKING:
 - a. PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION: PER MIL-STD-129:
SUPPLIER'S NAME,
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
SUPPLIER'S LOT OR SERIAL NUMBER.
DATE CODE, OR DATE OF MANUFACTURE.
 - b. MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

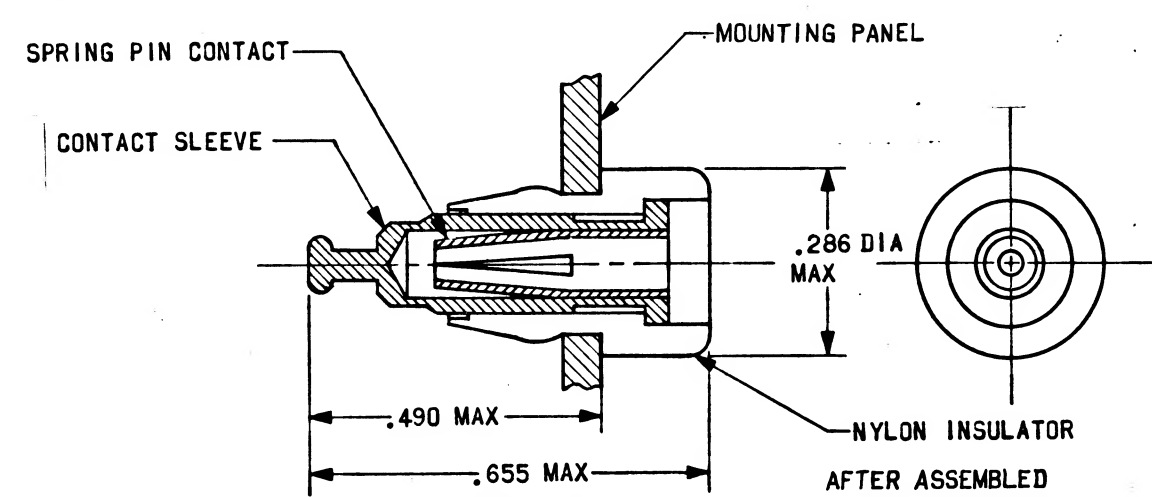
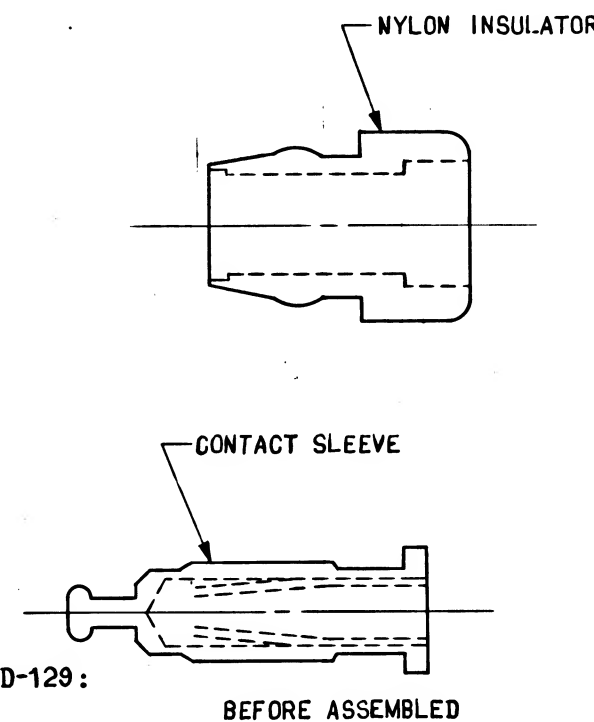
APPLICATION DATA (FOR REFERENCE):

1. PRESS INSULATOR INTO .219/.217 DIA. MOUNTING HOLE. SEAT CONTACT ASSEMBLY IN INSULATOR.
2. RANGE OF ACCEPTABLE PANEL THICKNESS: .031-.093.
3. FOR USE WITH STANDARD .081/.079 TEST PROBE.
4. CONTACT RESISTANCE (AT ROOM TEMPERATURE, WITH STANDARD .080 DIA. TEST PROD): LESS THAN .0015 OHM.
5. CAPACITANCE TO GROUND (.052 THICK PANEL): 3MMFD.
6. DIELECTRIC: SHALL WITHSTAND 10,000 VOLTS DC, FRONT OF JACK TO .052 THICK PANEL.

NASA PART NUMBER	INSULATOR COLOR	RAYTHEON (REF) CATALOG ITEM
1016166-001	NATURAL	TJ-400N
-002	YELLOW	TJ-401Y
-003	BROWN	TJ-402B
-004	RED	TJ-403R
-005	ORANGE	TJ-404OR
-006	BLACK	TJ-405BL
-007	GREEN	TJ-406G
-008	BLUE	TJ-407MB
-009	WHITE	TJ-408W

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	CHANGE IN ACCORDANCE WITH CM-195954 PER TDRR 7714	24-MAR-64	J.B. EF
B	REPLACED WITH CHANGE BY REV. C PER TDRR 09627	16-JUNE-64	M.G. EF



(B) REPLACED WITH CHANGE BY REV C

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS DWG NO. 497 CONTRACT 497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Bender</i> DATE 7-OCT-63 CHECKED <i>Ed Foster</i> 9 OCT 63 APPROVAL <i>L. G. Schuman</i> 10/10/63		JACK - TEST POINT, PRESS FIT, FIXED	
SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		NASA APPROVAL <i>W. K. ...</i>	CODE IDENT NO. SIZE C 1016166
FINAL FINISH NONE		MIT APPROVAL <i>W. K. ...</i>	SCALE NONE WT SHEET 1 OF 1
NEXT ASSY	USED ON	APPLICATION	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA, IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:
- A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
2. INSPECTION AND ACCEPTANCE:
- A. MECHANICAL REQUIREMENTS:
- (1) MATERIAL:
- (a) CONTACT: BERYLLIUM COPPER PER QQ-C-533, CONDITION A.
- (b) CONTACT SLEEVE: BRASS PER QQ-B-626, COMPOSITION 22 HALF HARD.
- (c) INSULATOR: NYLON (DUPONT ZYTEL 101)
- (2) FINISH:
- (a) CONTACT: GOLD PLATED .00005 THICKNESS PER MIL-G-45204, TYPE 2, CLASS 1.
- (b) CONTACT SLEEVE: NICKEL STRIKE AND GOLD PLATED .00005 THICKNESS PER MIL-G-45204, TYPE 2, CLASS 1.
- (3) DIMENSIONS: IN PICTURE.
- (4) MARKING:
- (a) PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION PER MIL-STD-129.
- SUPPLIER'S NAME.
- NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
- SUPPLIER'S LOT OR SERIAL NUMBER.
- DATE CODE, OR DATE OF MANUFACTURE.
- (b) MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.
- (5) HARDNESS:
- (a) CONTACT: PRECIPITATION HARDNESS PER MIL-H-7199.

APPLICATION DATA (FOR REFERENCE):

1. PRESS INSULATOR INTO .219/.217 DIA. MOUNTING HOLE. SEAT CONTACT ASSEMBLY IN INSULATOR.
2. RANGE OF ACCEPTABLE PANEL THICKNESS: .031-.093.
3. FOR USE WITH STANDARD .081/.079 TEST PROBE.
4. CONTACT RESISTANCE (AT ROOM TEMPERATURE, WITH STANDARD .080 DIA. TEST PROD): LESS THAN .0015 OHM.
5. CAPACITANCE TO GROUND (.052 THICK PANEL): 3MMFD.
6. DIELECTRIC: SHALL WITHSTAND 10,000 VOLTS DC, FRONT OF JACK TO .052 THICK PANEL.

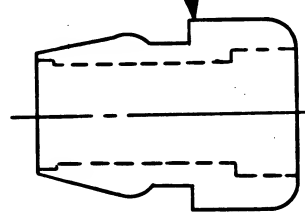
THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

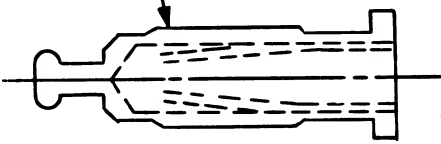
9919101

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
C	REPLACES REV B WITH CHANGE PER TDRR 09627	16 JUN 64	WIG E.F.

NYLON INSULATOR



CONTACT SLEEVE



BEFORE ASSEMBLED

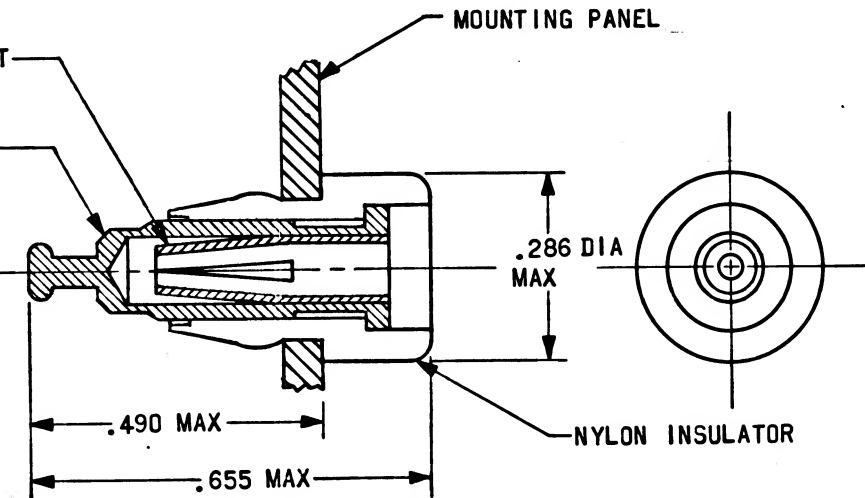
FOR INFORMATION ONLY

CLASS B RELEASE TDR No. _____ DATE _____

SPRING PIN CONTACT

CONTACT SLEEVE

MOUNTING PANEL



AFTER ASSEMBLED

NASA DASH NUMBER	INSULATOR COLOR	MANUFACTURER'S CATALOG ITEM (REF)
-001	NATURAL	TJ-400N
-002	YELLOW	TJ-401Y
-003	BROWN	TJ-402B
-004	RED	TJ-403R
-005	ORANGE	TJ-404OR
-006	BLACK	TJ-405BL
-007	GREEN	TJ-406G
-008	BLUE	TJ-407MB
-009	WHITE	TJ-408W

© REPLACES REV(B) WITH CHANGE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN BENDER DATE 7 OCT 63 CHECKED ED FOSTER 9 OCT 63 APPROVAL PEDICORD 9 OCT 63		JACK - TEST POINT, PRESS FIT, FIXED	
APPROVAL		SPECIFICATION CONTROL DRAWING	
NASA APPROVAL		CODE IDENT NO.	NASA DRAWING NO.
MIT APPROVAL		C 1016166	
		SCALE NONE	WT
		SHEET 1 OF 1	

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± ± ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		NONE
NEXT ASSY	USED ON	
APPLICATION		

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

- CONTACT: BERYLLIUM COPPER.
- CONTACT SLEEVE: BRASS.
- INSULATOR: NYLON (DUPONT ZYTEL).

(2) FINISH:

- CONTACT: SILVER AND GOLD PLATED.
- CONTACT SLEEVE: SILVER AND GOLD PLATED.

(3) DIMENSIONS:

- IN PICTURE.

(4) MARKING:

- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
 - SUPPLIER'S NAME.
 - NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
 - SUPPLIER'S LOT OR SERIAL NUMBER.
 - DATE CODE, OR DATE OF MANUFACTURE.
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

APPLICATION DATA (FOR REFERENCE):

- PRESS INSULATOR INTO .219/.217 DIA. MOUNTING HOLE. SEAT CONTACT ASSEMBLY IN INSULATOR.
- RANGE OF ACCEPTABLE PANEL THICKNESS: .031-.093.
- FOR USE WITH STANDARD .081/.079 TEST PROD.
- CONTACT RESISTANCE (AT ROOM TEMPERATURE, WITH STANDARD .080 DIA. TEST PROD): LESS THAN .0015 OHM.
- CAPACITANCE TO GROUND (.052 THICK PANEL): 3MMFD.
- DIELECTRIC: SHALL WITHSTAND 10,000 VOLTS DC, FRONT OF JACK TO .052 THICK PANEL.

NASA PART NUMBER	INSULATOR COLOR	RAYTHEON (REF) CATALOG ITEM
1016166-001	NATURAL	TJ-400N
-002	YELLOW	TJ-401Y
-003	BROWN	TJ-402B
-004	RED	TJ-403R
-005	ORANGE	TJ-404OR
-006	BLACK	TJ-405BL
-007	GREEN	TJ-406G
-008	BLUE	TJ-407MB
-009	WHITE	TJ-408W

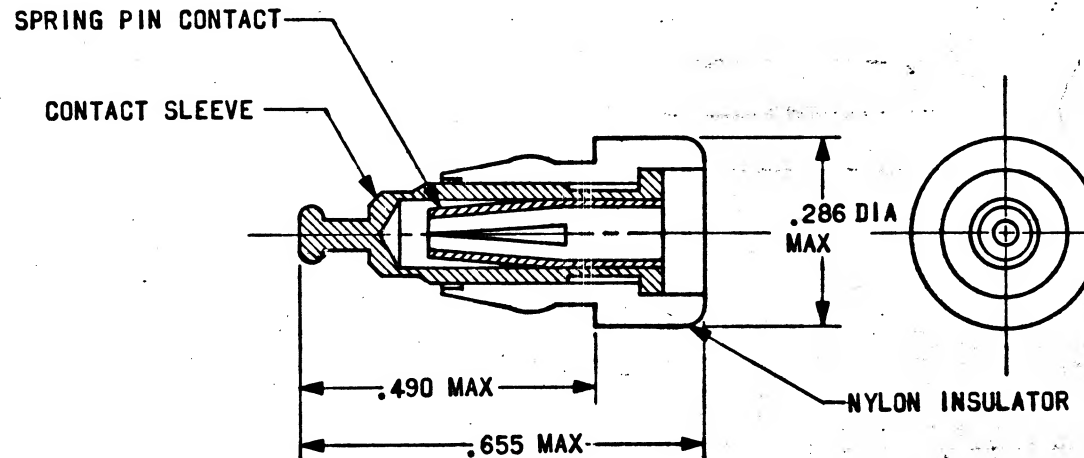
PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

9919101

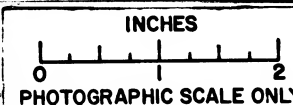
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04291 DATE 10/30/63



QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIG. NO.
		LIST OF MATERIALS	
		MIT INSTRUMENTATION LAB CAMBRIDGE, MASS CONTRACT 497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
		DWG. NO. DATE DRAWN <u>Sender</u> 7 OCT 63 CHECKED <u>Ed Foster</u> 9 OCT 63 APPROVAL <u>Ed Foster</u> 9 OCT 63	JACK - TEST POINT, PRESS FIT, FIXED
		NASA APPROVAL <u>W. K. ...</u> MIT APPROVAL <u>W. K. ...</u>	SPECIFICATION CONTROL DRAWING
		HEAT TREATMENT NONE	NASA DRAWING NO. 1016166
		FINAL FINISH NONE	SIZE C
NEXT ASSY	USED ON	SCALE NONE	WT
APPLICATION			SHEET 1 OF 1



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSEING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- LEAD DATA: TINNED IRON NICKEL ALLOY (DUMET)
- MARKING: THE MANUFACTURER'S NAME, TRADEMARK, OR CODE, TYPE DESIGNATION; SHALL BE PERMANENTLY AND LEGIBLY MARKED ON THE PART.

B. ELECTRICAL REQUIREMENTS: PER TABLE II

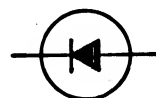
- FORWARD VOLTAGE (Vf) AT 1 MA
- INVERSE CURRENT (IR)

3. DESIGN REQUIREMENTS:

- MAXIMUM RATINGS: PER TABLE I
- STORAGE TEMPERATURE: 85°C MAX.
- POWER DISSIPATION: NOTE 1
- THERMAL RESISTANCE: (JUNCTION TO AMBIENT AIR WITH CLIPS 1/2 INCH FROM DIODE BODY IN STILL FREE AIR) NOTE 1

4. SPECIAL CONDITIONING BY SUPPLIER:

- BURN-IN: UNITS SHALL BE BURNED IN FOR 240 HOURS AT THE FOLLOWING CONDITIONS:
 - AMBIENT TEMPERATURE: NOTE 1
 - POWER DISSIPATION: NOTE 1
- THE MANUFACTURER SHALL DETERMINE AND RECORD THE FOLLOWING ELECTRICAL CHARACTERISTICS PRIOR TO AND FOLLOWING BURN-IN:
 - FORWARD VOLTAGE AT 1 MA
 - INVERSE CURRENT
- UNITS FAILING TO MEET INITIAL DRAWING REQUIREMENTS FOLLOWING BURN-IN SHALL NOT BE ACCEPTABLE. TEST DATA OF FINAL READING SHALL BE SUBMITTED WITH EACH SHIPMENT AND SHALL INCLUDE UNITS THAT FAIL DURING BURN-IN.



GRAPHICAL SYMBOL

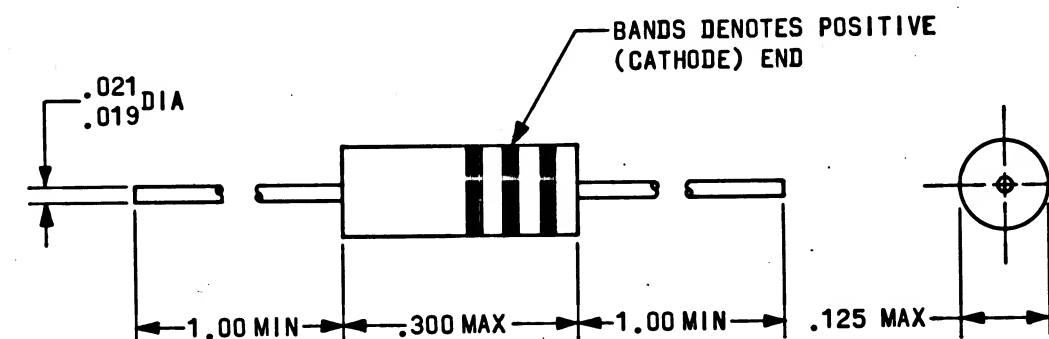
PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

1016167

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REPLACED WITH CHANGE BY REV. B PER CM-196485 REVISED PER TDR 09610	6-APR-64	J.B. EF

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04291 DATE 1/13/63



REPLACED WITH CHANGE BY REV B

A	A
SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± ± ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		NONE
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. NAS9- CONTRACT 497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN BENDER 11-067-63 DATE 14 OCT 63		SEMICONDUCTOR DEVICE, DIODE, STABISTOR, GERMANIUM	
CHECKED C. Wilson 14 OCT 63		SPECIFICATION CONTROL DRAWING	
APPROVAL J. B. Decker 14 OCT 63		NASA DRAWING NO. 1016167	
NASA APPROVAL J. B. Decker 14 OCT 63		CODE IDENT NO. C	SIZE
MIT APPROVAL J. B. Decker 14 OCT 63		SCALE NONE	WT
		SHEET 1 OF 2	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFERRING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

1016167

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REPLACED WITH CHANGE BY REV. B PER CM-196485 REVISED PER TDR 09610	6-APR-64	J.B. EF

TABLE I

MANUFACTURER'S ABSOLUTE MAXIMUM RATINGS AT 25°C AMBIENT TEMPERATURE						
MAX. CONTINUOUS CURRENT (IF)	RECURRENT PEAK CURRENT (if)	MAX. SURGE (1 SEC) if (SURGE)	MAX. INVERSE VOLTAGE	MAX. AMBIENT TEMP	EIA TYPE DESIGNATION (FOR REF. ONLY)	MANUFACTURER'S TYPE DESIGNATION (FOR REF. ONLY)
MADC	MADC	MADC	VOLTS	°C		
50	200 (NOTE 3)	500	6	85	1N3287	NOTE 1

TABLE II

PARAMETER	CONDITIONS	SYMBOL	SPECIFICATION LIMITS			
			MIN	MAX	TYPICAL	UNITS
FORWARD VOLTAGE	I = 1 MA	V _F	.21	.31		VOLTS
FORWARD VOLTAGE	I = 100 MA	V _F		1		VOLT
DYNAMIC RESISTANCE SEE NOTE 2	I = 1 MA, f = 1KC	R _{AC}		60		OHMS
TEMPERATURE COEFFICIENT	I = 1 MA				-2	MV/°C
INVERSE CURRENT	V _R = 2 V	I _R		15		uA

NOTES

- 1.) TO BE DESIGNATED BY SUPPLIER.
- 2.) DYNAMIC RESISTANCE MEASUREMENT METHOD TO BE SPECIFIED BY MANUFACTURER.
- 3.) DUTY CYCLE TO BE SPECIFIED BY SUPPLIER.

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04291 DATE 10/2/63

REPLACED WITH CHANGE BY REV B

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS 02139 DWS NO. 17-827-63 CONTRACT 497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Bender</i> DATE 17 OCT 63 CHECKED <i>C. Wilson</i> 14 OCT 63 APPROVAL <i>L. Block</i> 14 OCT 63 APPROVAL <i>L. Gidman</i> 10/24/63		SEMICONDUCTOR DEVICE, DIODE, STABISTOR, GERMANIUM	
DO NOT SCALE THIS DRAWING		SPECIFICATION CONTROL DRAWING	
MATERIAL		NASA DRAWING NO. 1016167	
HEAT TREATMENT		CODE IDENT NO. C	
NEXT ASSY USED ON		SCALE WT	
APPLICATION		SHEET 2 OF 2	
FINAL FINISH		MIT APPROVAL <i>W. K. 3 Oct 63</i>	

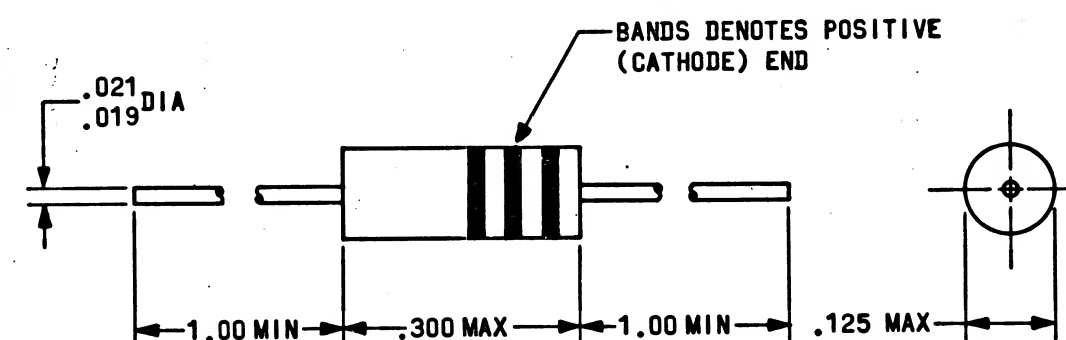
NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY APPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFERRING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

REQUIREMENTS:

1. GENERAL:
 - A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
 - B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
2. INSPECTION AND ACCEPTANCE:
 - A. MECHANICAL REQUIREMENTS:
 - (1) LEAD DATA: TINNED IRON NICKEL ALLOY (DUMET)
 - (2) MARKING: THE MANUFACTURER'S NAME, TRADEMARK, OR CODE, TYPE DESIGNATION; SHALL BE PERMANENTLY AND LEGIBLY MARKED ON THE PART.
 - B. ELECTRICAL REQUIREMENTS: PER TABLE II
 - (1) FORWARD VOLTAGE (V_F) AT 1 MA
 - (2) INVERSE CURRENT (I_R)
3. DESIGN REQUIREMENTS:
 - A. MAXIMUM RATINGS: PER TABLE I
 - B. STORAGE TEMPERATURE: 85°C MAX.
 - C. POWER DISSIPATION: NOTE 1
 - D. THERMAL RESISTANCE: (JUNCTION TO AMBIENT AIR WITH CLIPS 1/2 INCH FROM DIODE BODY IN STILL FREE AIR) NOTE 1
4. SPECIAL CONDITIONING BY SUPPLIER:
 - A. BURN-IN: UNITS SHALL BE BURNED IN FOR 240 HOURS AT THE FOLLOWING CONDITIONS:
 - (1) AMBIENT TEMPERATURE: NOTE 1
 - (2) POWER DISSIPATION: NOTE 1
 - B. THE MANUFACTURER SHALL DETERMINE AND RECORD THE FOLLOWING ELECTRICAL CHARACTERISTICS PRIOR TO AND FOLLOWING BURN-IN:
 - (1) FORWARD VOLTAGE AT 1 MA
 - (2) INVERSE CURRENT
 - C. UNITS FAILING TO MEET INITIAL DRAWING REQUIREMENTS FOLLOWING BURN-IN SHALL NOT BE ACCEPTABLE. TEST DATA OF FINAL READING SHALL BE SUBMITTED WITH EACH SHIPMENT AND SHALL INCLUDE UNITS THAT FAIL DURING BURN-IN.

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04291 DATE 10/16/67



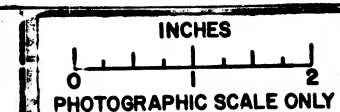
GRAPHICAL SYMBOL

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
TOLERANCES ON	
FRACTIONS DECIMALS ANGLES	
$\pm .02$ $\pm .005$ \pm	
DO NOT SCALE THIS DRAWING	
MATERIAL	SEE REQUIREMENTS
HEAT TREATMENT	NONE
FINAL FINISH	NONE
APPLICATION	
NEXT ASSY	USED ON

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. NAS9- CONTRACT 497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DWG. NO. 11-067-63	DATE 14 OCT 63	SEMICONDUCTOR DEVICE, DIODE, STABISTOR, GERMANIUM	
DRAWN BENDER	CHECKED C. Wilson	SPECIFICATION CONTROL DRAWING	
APPROVAL J. B. Beck	APPROVAL J. Beckman	CODE IDENT NO. SIZE NASA DRAWING NO.	
NASA APPROVAL	MIT APPROVAL	C 1016i67	
SCALE NONE	WT	SHEET 1 OF 2	



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSE, THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREIN.

2919101

REVISIONS

SYM DESCRIPTION DATE APPROVAL

TABLE I

MANUFACTURER'S ABSOLUTE MAXIMUM RATINGS AT 25°C AMBIENT TEMPERATURE						
MAX. CONTINUOUS CURRENT (I _F)	RECURRENT PEAK CURRENT (I _F)	MAX. SURGE (1 SEC) I _F (SURGE)	MAX. INVERSE VOLTAGE	MAX. AMBIENT TEMP	EIA TYPE DESIGNATION (FOR REF. ONLY)	MANUFACTURER'S TYPE DESIGNATION (FOR REF. ONLY)
MADC	MADC	MADC	VOLTS	°C		
50	200 (NOTE 3)	500	6	85	1N3287	NOTE 1

TABLE II

PARAMETER	CONDITIONS	SYMBOL	SPECIFICATION LIMITS			
			MIN	MAX	TYPICAL	UNITS
FORWARD VOLTAGE	I = 1 MA	V _F	.21	.31		VOLTS
FORWARD VOLTAGE	I = 100 MA	V _F		1		VOLT
DYNAMIC RESISTANCE SEE NOTE 2	I = 1 MA, f = 1 KC	R _{AC}		60		OHMS
TEMPERATURE COEFFICIENT	I = 1 MA				-2	MV/°C
INVERSE CURRENT	V _R = 2 V	I _R		15		uA

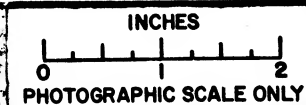
FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04291 DATE 1/2/63

NOTES

- 1.) TO BE DESIGNATED BY SUPPLIER.
- 2.) DYNAMIC RESISTANCE MEASUREMENT METHOD TO BE SPECIFIED BY MANUFACTURER.
- 3.) DUTY CYCLE TO BE SPECIFIED BY SUPPLIER.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. NAS9- CONTRACT 497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Bender</i> 11-26-63 CHECKED <i>C. Wilson</i> 14 OCT 63 APPROVAL <i>L. B. Black</i> 19 OCT 63 APPROVAL <i>L. Gedman</i> 10/26/63		SEMICONDUCTOR DEVICE, DIODE, STABISTOR, GERMANIUM	
HEAT TREATMENT		SPECIFICATION CONTROL DRAWING	
NEXT ASSY USED ON APPLICATION		NASA APPROVAL <i>Amick</i> 10/26/63 MIT APPROVAL <i>W. H. H. 30 Oct 63</i>	
		CODE IDENT NO. SIZE C	NASA DRAWING NO. 1016167
		SCALE	WT SHEET 2 OF 2



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID OR SIMILAR SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREOF.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- LEAD DATA: NOTE 1
- MARKING: THE MANUFACTURER'S NAME, TRADEMARK, OR CODE, TYPE DESIGNATION: SHALL BE PERMANENTLY AND LEGIBLY MARKED ON THE PART.

B. ELECTRICAL REQUIREMENTS: PER TABLE II

- REVERSE CURRENT
- FORWARD CURRENT

3. DESIGN REQUIREMENTS:

- MAXIMUM RATINGS: PER TABLE I
- STORAGE TEMPERATURE: 75°C MAX
- POWER DISSIPATION: NOTE 1
- THERMAL RESISTANCE: NOTE 1

4. SPECIAL CONDITIONING BY SUPPLIER:

- BURN-IN: UNITS SHALL BE BURNED-IN FOR 240 HOURS AT THE FOLLOWING CONDITIONS:
 - AMBIENT TEMPERATURE: NOTE 1
 - POWER DISSIPATION: NOTE 1
- THE MANUFACTURER SHALL DETERMINE AND RECORD THE FOLLOWING ELECTRICAL CHARACTERISTICS PRIOR TO AND FOLLOWING BURN-IN:
 - REVERSE CURRENT
 - FORWARD CURRENT
- UNITS FAILING TO MEET INITIAL DRAWING REQUIREMENTS FOLLOWING BURN-IN SHALL NOT BE ACCEPTABLE. TEST DATA OF FINAL READING SHALL BE SUBMITTED WITH EACH SHIPMENT AND SHALL INCLUDE UNITS THAT FAIL DURING BURN-IN.

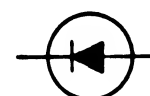
TABLE I

MANUFACTURER'S ABSOLUTE MAX. RATINGS AT 25°C AMBIENT TEMPERATURE				
CONTINUOUS WORKING VOLTAGE	AVE. RECTIFIED FORWARD CURRENT	MAX. AMBIENT TEMPERATURE	EIA TYPE DESIGNATION (FOR REF. ONLY)	MANUFACTURER'S TYPE DESIGNATION (FOR REF. ONLY)
VOLTS DC	MADC	°C		
23	50	75	IN87	NOTE 1

NOTE 1. TO BE SPECIFIED BY SUPPLIER

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

8919101



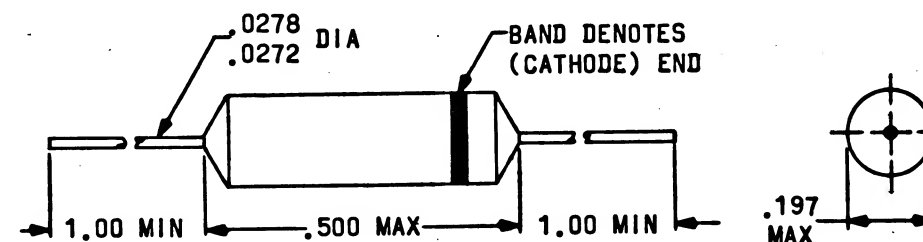
GRAPHICAL SYMBOL

TABLE II

ELECTRICAL CHARACTERISTICS AT AMBIENT TEMPERATURE = 25°C (UNLESS OTHERWISE SPECIFIED)					
PARAMETER	CONDITIONS	SYMBOL	MIN	MAX	UNITS
REVERSE CURRENT	E _B =1.5 VOLTS	I _R	-	30	μA
FORWARD CURRENT	E _F =25 VOLTS	I _F	.10	-	Ma

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04291 DATE 4/4/63



REPLACED WITH CHANGE BY REV B

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS CONTRACT 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>D. Smith</i> DATE 10/6/63 CHECKED <i>C. Wilson</i> 15 OCT 63 APPROVAL <i>W. K. Black</i> 15 OCT 63 APPROVAL <i>W. K. Black</i> 10/28/63		SEMICONDUCTOR DEVICE, DIODE (GERMANIUM, AXIAL LEAD)	
NASA APPROVAL <i>W. K. Black</i> 1/15/64 MIT APPROVAL <i>W. K. Black</i> 3/28/63		SPECIFICATION CONTROL DRAWING	
CODE IDENT NO.		SIZE	NASA DRAWING NO.
SCALE NONE		WT	1016168
SHEET 1		OF 1	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE USER SHALL NOT BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

B 8919101

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	REPLACES REV. A WITH CHANGE PER CM-196671 REVISED PER TDR 09617	7 APR 64	JW EF

REQUIREMENTS:

- GENERAL:
 - INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
 - SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
- INSPECTION AND ACCEPTANCE:
 - MECHANICAL REQUIREMENTS:
 - LEAD DATA: TINNED IRON NICKEL ALLOY (DUMET)
 - MARKING: THE MANUFACTURER'S NAME, TRADEMARK, OR CODE, NASA DRAWING NUMBER, WHICH SHALL CONSIST OF AT LEAST THE LAST THREE DIGITS, AND REVISION LETTER; SHALL BE PERMANENTLY AND LEGIBLY MARKED ON THE PART. THE MANUFACTURER'S TYPE DESIGNATION MAY APPEAR ON THE PART OR PACKAGE.
 - ELECTRICAL REQUIREMENTS: PER TABLE II
 - REVERSE CURRENT
 - FORWARD CURRENT
- DESIGN REQUIREMENTS:
 - MAXIMUM RATINGS: PER TABLE I
 - STORAGE TEMPERATURE: 75°C MAX
 - POWER DISSIPATION 80 MW AT 25°C
 - THERMAL RESISTANCE: 1 MW/°C
- SPECIAL CONDITIONING BY SUPPLIER:
 - BURN-IN: UNITS SHALL BE BURNED-IN FOR 240 HOURS AT THE FOLLOWING CONDITIONS:
 - AMBIENT TEMPERATURE: 25°C
 - CURRENT AVE: 25 MA
 - THE MANUFACTURER SHALL DETERMINE AND RECORD THE FOLLOWING ELECTRICAL CHARACTERISTICS PRIOR TO AND FOLLOWING BURN-IN:
 - REVERSE CURRENT
 - FORWARD CURRENT
 - UNITS FAILING TO MEET INITIAL DRAWING REQUIREMENTS FOLLOWING BURN-IN SHALL NOT BE ACCEPTABLE. TEST DATA OF FINAL READING SHALL BE SUBMITTED WITH EACH SHIPMENT AND SHALL INCLUDE UNITS THAT FAIL DURING BURN-IN.

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04291 DATE

TABLE II
ELECTRICAL CHARACTERISTICS AT AMBIENT TEMPERATURE = 25°C
(UNLESS OTHERWISE SPECIFIED)

PARAMETER	CONDITIONS	SYMBOL	SPECIFICATION LIMITS		
			MIN	MAX	UNITS
REVERSE CURRENT	E _B =1.5 VOLTS	I _R	-	30	μA
FORWARD CURRENT	E _F = .25 VOLTS	I _F	.10	-	Ma

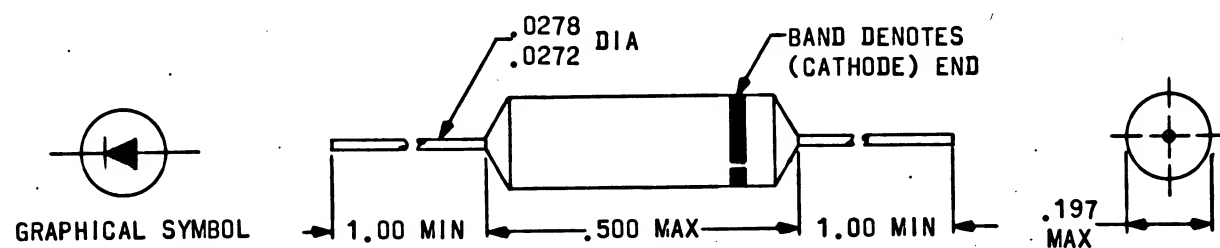


TABLE I

MANUFACTURER'S ABSOLUTE MAX. RATINGS AT 25°C AMBIENT TEMPERATURE				
CONTINUOUS WORKING VOLTAGE	AVE. RECTIFIED FORWARD CURRENT	MAX. AMBIENT TEMPERATURE	EIA TYPE DESIGNATION (FOR REF. ONLY)	MANUFACTURER'S TYPE DESIGNATION (FOR REF. ONLY)
VOLTS DC	MADC	°C	IN87	53409G
23	50	75		

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

REPLACES REV A WITH CHANGE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS CONTRACT 497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN DOBBERT 14 OCT 63 CHECKED WILSON 15 OCT 63 APPROVAL BLECK 15 OCT 63 APPROVAL [Signature]		SEMICONDUCTOR DEVICE, DIODE (GERMANIUM, AXIAL LEAD)	
NASA APPROVAL [Signature] MIT APPROVAL [Signature]		CODE IDENT NO. C SIZE C	NASA DRAWING NO. 1016168
SCALE NONE		WT	SHEET 1 OF 1

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON	
FRACTIONS	DECIMALS ANGLES
±	± ±
DO NOT SCALE THIS DRAWING	
MATERIAL	
SEE REQUIREMENTS	
HEAT TREATMENT	
NONE	
FINAL FINISH	
NONE	
NEXT ASSY	USED ON
APPLICATION	

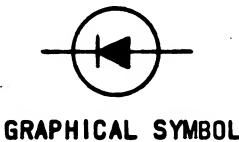
NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE BEEN ADVISED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

REQUIREMENTS:

1. GENERAL:
 - A. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
 - B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
2. INSPECTION AND ACCEPTANCE:
 - A. MECHANICAL REQUIREMENTS:
 - (1) LEAD DATA: NOTE 1
 - (2) MARKING: THE MANUFACTURER'S NAME, TRADEMARK, OR CODE, TYPE DESIGNATION: SHALL BE PERMANENTLY AND LEGIBLY MARKED ON THE PART.
 - B. ELECTRICAL REQUIREMENTS: PER TABLE II
 - (1) REVERSE CURRENT
 - (2) FORWARD CURRENT
3. DESIGN REQUIREMENTS:
 - A. MAXIMUM RATINGS: PER TABLE I
 - B. STORAGE TEMPERATURE: 75°C MAX
 - C. POWER DISSIPATION: NOTE 1
 - D. THERMAL RESISTANCE: NOTE 1
4. SPECIAL CONDITIONING BY SUPPLIER:
 - A. BURN-IN: UNITS SHALL BE BURNED-IN FOR 240 HOURS AT THE FOLLOWING CONDITIONS:
 - (1) AMBIENT TEMPERATURE: NOTE 1
 - (2) POWER DISSIPATION: NOTE 1
 - B. THE MANUFACTURER SHALL DETERMINE AND RECORD THE FOLLOWING ELECTRICAL CHARACTERISTICS PRIOR TO AND FOLLOWING BURN-IN:
 - (1) REVERSE CURRENT
 - (2) FORWARD CURRENT
 - C. UNITS FAILING TO MEET INITIAL DRAWING REQUIREMENTS FOLLOWING BURN-IN SHALL NOT BE ACCEPTABLE. TEST DATA OF FINAL READING SHALL BE SUBMITTED WITH EACH SHIPMENT AND SHALL INCLUDE UNITS THAT FAIL DURING BURN-IN.

TABLE II
ELECTRICAL CHARACTERISTICS AT AMBIENT TEMPERATURE = 25°C
(UNLESS OTHERWISE SPECIFIED)

PARAMETER	CONDITIONS	SYMBOL	SPECIFICATION LIMITS		
			MIN	MAX	UNITS
REVERSE CURRENT	E _B =1.5 VOLTS	I _R	-	30	μA
FORWARD CURRENT	E _F =25 VOLTS	I _F	.10	-	Ma



GRAPHICAL SYMBOL

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04291 DATE 9/4/63

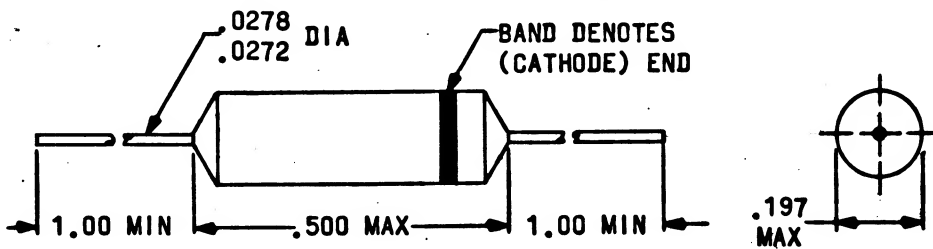


TABLE I
MANUFACTURER'S ABSOLUTE MAX. RATINGS AT 25°C AMBIENT TEMPERATURE

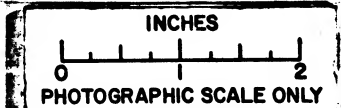
CONTINUOUS WORKING VOLTAGE	AVE. RECTIFIED FORWARD CURRENT	MAX. AMBIENT TEMPERATURE	EIA TYPE DESIGNATION (FOR REF. ONLY)	MANUFACTURER'S TYPE DESIGNATION (FOR REF. ONLY)
VOLTS DC	MADC	°C		
23	50	75	IN87	NOTE 1

NOTE 1. TO BE SPECIFIED BY SUPPLIER

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		NONE
NEXT ASSY	USED ON	
		APPLICATION

QTY REQ	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
		LIST OF MATERIALS	
	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS DWS. NO. CONTRACT 5497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
	DRAWN <i>A. B. B. 10/2/63</i> CHECKED <i>E. Wilson 16 OCT 63</i> APPROVAL <i>E. K. Block 15 OCT 63</i>	SEMICONDUCTOR DEVICE, DIODE (GERMANIUM, AXIAL LEAD)	
	NASA APPROVAL <i>W. K. 10/2/63</i>	SPECIFICATION CONTROL DRAWING	
	MIT APPROVAL <i>W. K. 10/2/63</i>	CODE IDENT NO. SIZE C	NASA DRAWING NO. 1016168
		SCALE NONE WT	SHEET 1 OF 1



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIERS SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS AS CONTAINED IN ND 1015404, CLASS 3.
- UNITS SHALL BE CAPABLE OF MEETING ALL ELECTRICAL AND MECHANICAL REQUIREMENTS OF ND 1002132 AND ND 1002013 EXCEPT AS NOTED IN THIS DRAWING.

2. ACCEPTANCE AND INSPECTION:

A. MECHANICAL PROPERTIES:

- MARKING:** UNITS SHALL BE MARKED PER MIL-STD-130 WITH THE MANUFACTURER'S NAME, CODE, OR SYMBOL, NASA DRAWING NUMBER AND REVISION LETTER, TYPE AND CONTRACT NUMBER, NAMEPLATE TO READ FROM LEAD END. UNITS TO BE INDIVIDUALLY PACKED IN ACCORDANCE WITH COMMERCIAL PACKAGING PER MIL-P-116, METHOD III.
- LEADS:** SHALL BE TYPE E-28 PER MIL-W-16878 CONSISTING OF 7 STRANDS OF NO. 36 AWG WIRE, INSULATED WITH EXTRUDED TEFLON. LEADS SHALL BE COLOR CODED.
- RUNOUT OF DIA "A"** SHALL NOT EXCEED .001 T.I.R. WHEN MEASURED WITH THE UNIT IN A VERTICAL POSITION SUPPORTED BY THE OUTPUT SHAFT.
- RUNOUT OF DIA "B"** SHALL NOT EXCEED .001 T.I.R. WHEN MEASURED WITH THE UNIT IN A VERTICAL POSITION SUPPORTED BY THE RESOLVER CASE.
- SHAFT END PLAY** NOT TO EXCEED .002 UNDER 8 OZ. ± 1 OZ. MEASURING GAUGE LOAD.
- RADIAL PLAY OF SHAFT** MEASURED AT POINT NOT MORE THAN .125 FROM FRONT FACE OF CASE SHALL NOT EXCEED .001 T.I.R. UNDER 8 OZ. $\pm 1/2$ OZ. REVERSING GAUGE LOAD APPLIED NOT MORE THAN .25 INCHES FROM FRONT FACE OF CASE.

B. FRICTION TORQUE: 25 GRAM-CM MAXIMUM AT $25^{\circ} \pm 5^{\circ}C$

C. ELECTRICAL PROPERTIES:

(1) NULL VOLTAGE:

TOTAL 40 MILLIVOLTS MAX
FUNDAMENTAL 40 MILLIVOLTS MAX

- PHASE SHIFT: 7° MAX
- PHASE SHIFT VS ROTATION: $\pm 2^{\circ}$
- ANGULAR ERROR: ± 15 ARC MINUTES PEAK
- IMPEDANCE UNBALANCE, SECONDARY: 200 Z SEC MAX
- PHASE SHIFT VS VOLTAGE: $\pm 1^{\circ}$
- TRANSFORMER RATIO VS VOLTAGE: $\pm 1^{\circ}$
- PHASE EQUATIONS:

$$E_{S1-S3} = K E_{P1-P3} \cos \theta - K E_{P2-P3} \sin \theta$$

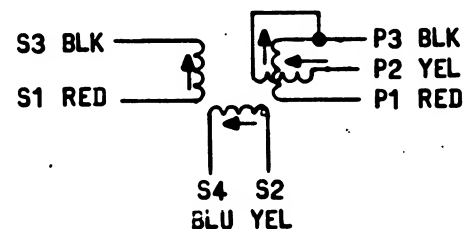
$$E_{S2-S4} = K E_{P2-P3} \cos \theta - K E_{P1-P3} \sin \theta$$

θ IS THE SHAFT ANGLE DEFINED POSITIVE FOR COUNTER-CLOCKWISE ROTATION FACING THE SHAFT

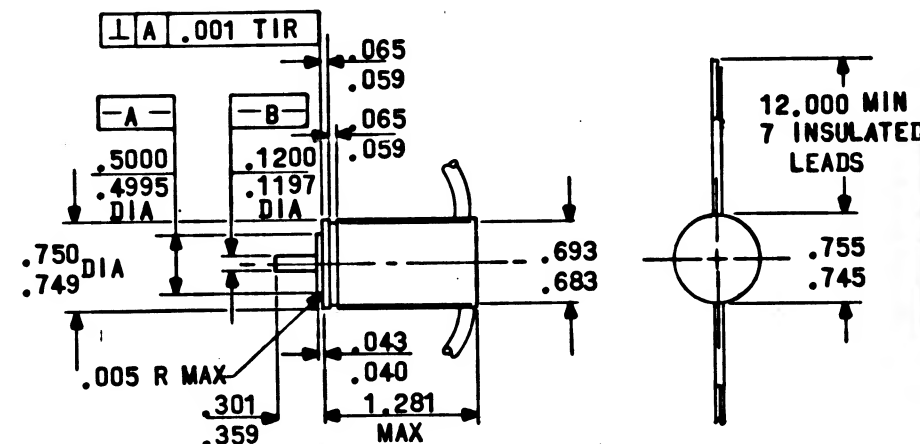
PROCURE ONLY FROM APPROVED SOURCES LISTED
IN ND 1002034 FOR THIS DRAWING.

3. DESIGN:

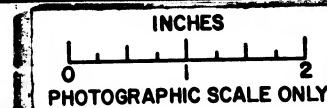
- OPERATING TEMPERATURE RANGE: $-55^{\circ}C$ TO $+125^{\circ}C$
- CASE AND SHAFT MATERIAL SHALL BE CRES PER QQ-S-763.
- LUBRICATION:** BEARINGS SHALL BE LUBRICATED WITH LUBRICANT SPECIFIED IN ND 1002077, G.E. F-50 SILICON OIL OR EQUIVALENT.
- WEIGHT: APPROXIMATELY 50 GRAMS.
- FRAME SIZE: 8



SCHEMATIC (FACING SHAFT)



QTY REQ	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS 02139 CONTRACT NO. 497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>R. L. P.</i> DATE 9 OCT 63 CHECKED <i>E. J. Foster</i> 10 OCT 63 APPROVAL <i>P. R. 3</i> 10 OCT 63 APPROVAL <i>L. J. G.</i> 10 OCT 63		RESOLVER, TRANSMITTER (FRAME SIZE 8)	
SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		NASA APPROVAL <i>R. L. P.</i> 10 OCT 63	CODE IDENT NO. SIZE C
FINAL FINISH NONE		MIT APPROVAL <i>L. J. G.</i> 30 OCT 63	NASA DRAWING NO. 1016169
NEXT ASSY	USED ON	SCALE NONE WT	SHEET 1 OF 1
APPLICATION			



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- MATERIAL: SYNTHETIC RUBBER PER MIL-R-6855, CLASS II, GRADE 60.
- HARDNESS: SHORE "A" DUROMETER 60 ± 5
- DIMENSIONS: SHALL BE AS SHOWN. MAXIMUM SINGLE LENGTH SHALL BE PER -.001
- LENGTH TOLERANCES:

OVER 0 TO 12	$+.12$ $-.00$
OVER 12 TO 36	$+.25$ $-.00$
OVER 36	$+.50$ $-.00$

(5) MARKING:

- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER
DATE CODE, OR DATE OF MANUFACTURE
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

NASA PART NUMBER	LENGTH L	MAY BE MADE FROM	RUBBERCRAFT EXTRUSION NO.
1016171-001	1200^{+2}_{-0}	-	1681
-002	14.25	-001	

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

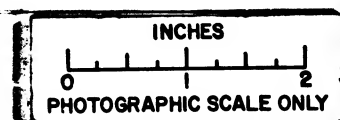
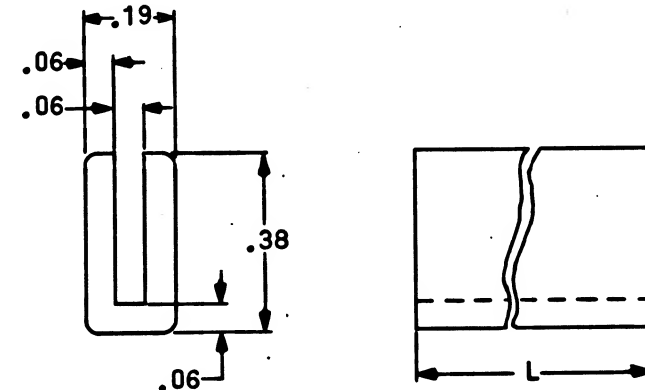
		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		\pm $\pm .02$ \pm
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		NONE
NEXT ASSY	USED ON	
		APPLICATION

		MIT INSTRUMENTATION LAB CAMBRIDGE, MASS DWE NO. CONTRACT 9-497
		DRAWN <i>D. P. Fitch</i> DATE 10 OCT 63
		CHECKED <i>Ed. Fitch</i> 14 OCT 63
		APPROVAL <i>L. G. Korman</i> 10/28/63
		NASA APPROVAL <i>R. M. Smith</i> 10/28/63
		MIT APPROVAL <i>L. G. Korman</i> 30 Oct 63

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
		LIST OF MATERIALS	
		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
		SEAL, CHANNEL, EXTRUDED	
		SPECIFICATION CONTROL DRAWING	
		CODE IDENT NO. SIZE	NASA DRAWING NO.
		C	1016171
		SCALE NONE WT	SHEET 1 OF 1

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04291 DATE 10/30/63



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1016173

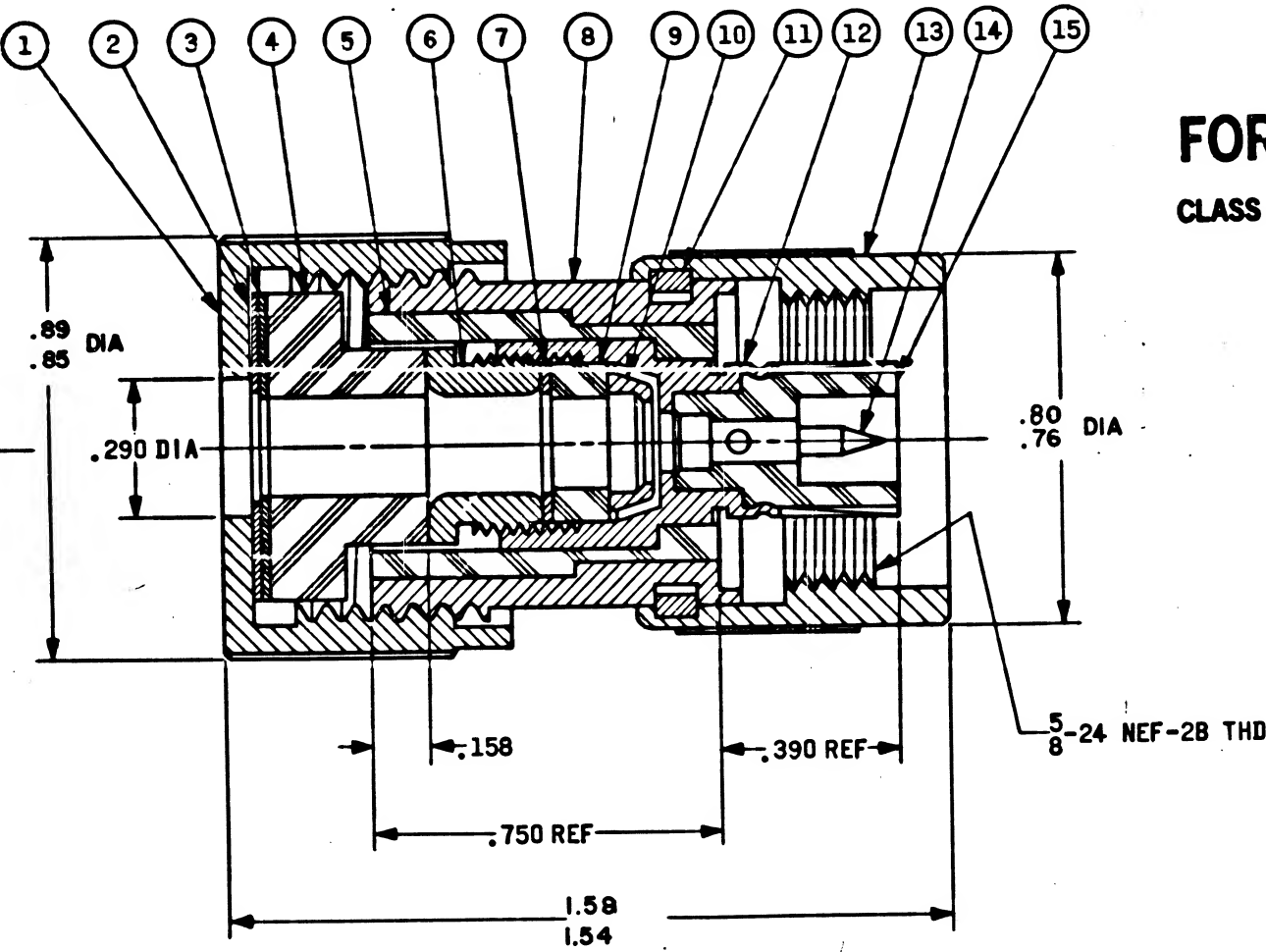
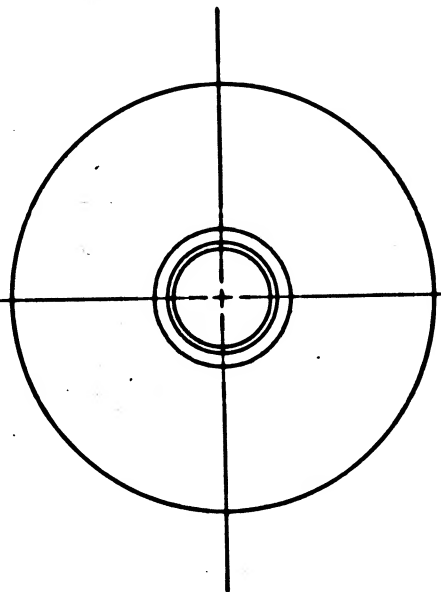
REVISIONS

SYM DESCRIPTION DATE APPROVAL

SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	

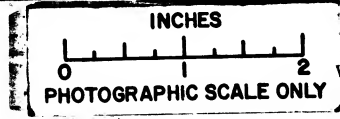
FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04291 DATE 4/24/63



		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± .005 ±
		DO NOT SCALE THIS DRAWING
		MATERIAL SEE REQUIREMENTS
		HEAT TREATMENT NONE
		FINAL FINISH NONE
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. DWS NO. CONTRACT MSS-677		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>[Signature]</i> DATE 10/27/63 CHECKED <i>[Signature]</i> 1500/63 APPROVAL <i>[Signature]</i> 1500/63		CONNECTOR-PLUG ELECTRICAL TRIAxIAL TYPE	
NASA APPROVAL <i>[Signature]</i> 1/3/64 MIT APPROVAL <i>[Signature]</i> 3/20/64		CODE IDENT NO.	NASA DRAWING NO.
		C	1016173
SCALE NONE		WT	SHEET 1 OF 2



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1 GENERAL:

- A INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
- B SUPPLIER SHALL CONFORM TO QUALIFICATION ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
- C SHALL BE PACKAGED IN A PLIOFILM OR EQUIVELANT BAG SEALED TO PREVENT EXPOSURE OF CONNECTOR TO DELETERIOUS ATMOSPHERES.

2 INSPECTION AND ACCEPTANCE: (SAMPLE)

A MECHANICAL REQUIREMENTS:

- (1) SHELL: BRASS COMPOSITION B, HALF HARD PER SPECIFICATION QQ-B-611.
- (2) CONTACT: PIN, BRASS COMPOSITION B, HALF HARD PER SPECIFICATION QQ-B-613 SILVER PLATED.
- (3) INSERT: TEFLON.
- (4) GASKETS: SILICONE RUBBER.
- (5) PLATING: LARGE CLAMP NUT (ITEM NO. 1) AND COUPLING NUT (ITEM NO. 13) SHALL BE RHODIUM PLATED .000008 TO .000010 THICK OVER SILVER.
- (6) MARKING: THE MANUFACTURER'S NAME AND PART NUMBER SHALL BE PERMANENTLY AND LEGIBLY MARKED ON THE SHELL OF EACH CONNECTOR.

B ELECTRICAL REQUIREMENTS:

- (1) VOLTAGE RATINGS: 500 VOLTS AC RMS MAX
- (2) CURRENT RATING OF CONTACT: 7 AMPERES MAX
- (3) IMPEDANCE: NOT SPECIFIED
- (4) V.S.W.R.: NOT SPECIFIED
- (5) DESIGN REQUIREMENTS: FOR USE WITH AMPHENOL 21-209 CABLE OR EQUIVALENT (50 OHM)

3 APPLICATION DATA:

- A MATES WITH-1016174 FOR USE WITH CABLE TYPE 21- 204.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

5219101

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
-----	-------------	------	----------

TABLE I

PART NUMBER	MANUFACTURER'S (REF) PART NUMBER
1016173-001	5633

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04291 DATE 11/30/63

TABLE II

ITEM NO.	QTY	GREMAR PART NUMBER	DESCRIPTION
1	1	5632-14	LARGE CLAMP NUT
2	1	5632-32	WASHER
3	1	5632-31	WASHER
4	1	5632-25	INSULATOR
5	1	5633-26	INSULATOR SLEEVE
6	1	88-14	NUT
7	1	88-31	WASHER
8	1	5633-4	BODY
9	1	88-35	GASKET
10	1	88-28	CLAMP
11	1	188-17	LOCK RING
12	1	88-4	BODY
13	1	188-13	COUPLING NUT
14	1	88-19	CONTACT
15	1	88-24	INSULATOR

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>[Signature]</i> DATE 10/27/63 CHECKED <i>[Signature]</i> 15 OCT 63 APPROVAL <i>[Signature]</i> 10/28/63		CONNECTOR-PLUG ELECTRICAL TRIAxIAL TYPE	
NESA APPROVAL <i>[Signature]</i> 11/14/63		CODE IDENT NO.	NASA DRAWING NO.
MIT APPROVAL <i>[Signature]</i> 30 Oct 63		SIZE C	1016173
SCALE NONE		WT	SHEET 2 OF 2

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± .005 ±
DO NOT SCALE THIS DRAWING
MATERIAL
SEE NOTES
HEAT TREATMENT
FINAL FINISH

NEXT ASSY USED ON APPLICATION

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

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REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- THESE CONNECTORS SHALL CONFORM TO THE REQUIREMENTS OF MIL-C-26482 EXCEPT END BELL AND WITH THE PARTICULAR REQUIREMENTS LISTED BELOW AS REFERENCE INFORMATION.
- SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
- UNITS SHALL BE CAPABLE OF MEETING ALL QUALIFICATION REQUIREMENTS SPECIFIED IN ND 1002052 UNLESS MODIFIED OR AMENDED BY THE INSPECTION AND ACCEPTANCE REQUIREMENTS LISTED BELOW.
- CONTACTS SUPPLIED SEPARATELY IN A PLIOFILM BAG WITH 10% SPARES.
- CONTACTS SHALL BE PER ALL REQUIREMENTS OF MIL-C-23216 AND WIRE WELL AREA PER MS 3190.

2. INSPECTION AND ACCEPTANCE:

A. ELECTRICAL REQUIREMENTS:

- ELECTRICAL CHARACTERISTICS (IN ACCORDANCE WITH THE MILITARY SPECIFICATIONS):
- DIELECTRIC WITHSTANDING VOLTAGE: 1500 VRMS.
- INSULATION RESISTANCE: 5000 MEGOHMS MINIMUM (500 VDC)

B. MECHANICAL REQUIREMENTS:

- MARKING: UNITS SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE NASA DWG NUMBER AND REVISION LETTER, AND THE MANUFACTURER'S NAME AND/OR SYMBOL. THE MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE. EACH CONTAINER SHALL INCLUDE THE NASA DRAWING AND DASH NUMBER PLUS THE REVISION LETTER.

3. DESIGN REQUIREMENTS:

A. OPERATING LIFE: SEE RELIABILITY NOTE

B. STORAGE LIFE: 1 YEAR WITHOUT GROMMET DETERIORATION.

C. CONSTRUCTION:

- TYPE CONNECTOR: ENVIRONMENT SEALED BY A GROMMET AND INSERT WITH A STRAIN RELIEF CLAMP, SOLID SHELL AND POSITIVE INSERT RETENTION.
- TYPE CONTACT: CRIMP CONTACTS PER MS3193 SOCKETS
- NUMBER AND SIZE OF CONTACTS: SEE TABLE
- COUPLING: BAYONET.
- SHELL: ALUMINUM ALLOY, PER QQ-A-591, FINISH PER QQ-P-416, TYPE II CLASS C OLIVE DRAB COLOR.

D. RELIABILITY: CONNECTORS SHALL BE CAPABLE OF WITHSTANDING 500 CYCLES OF ENGAGEMENT AND DISENGAGEMENT WITHOUT ELECTRICAL OR MECHANICAL FAILURE.

E. ELECTRICAL:

- INSULATION RESISTANCE (+125°C): 50 MEGOHMS MINIMUM. (500 VDC)
- CONTACT RESISTANCE: 50 MILLIVOLTS MAXIMUM AT RATED CURRENT.
- CONTACT CURRENT RATING: 7.5 AMPERES.
- VOLTAGE RATING: 700 VDC AND 500 VRMS
- INSERT ARRANGEMENT: PER MS33688

NASA PART NUMBER	NO. OF CONTACTS	INSERT ROTATION DEGREES	AMPHENOL IDENTIFICATION
1016181-001	10 12 AWG	0	69-OR-28-20S(100)
1016181-002	4 16 AWG	80	69-OR-28-20SW(100)

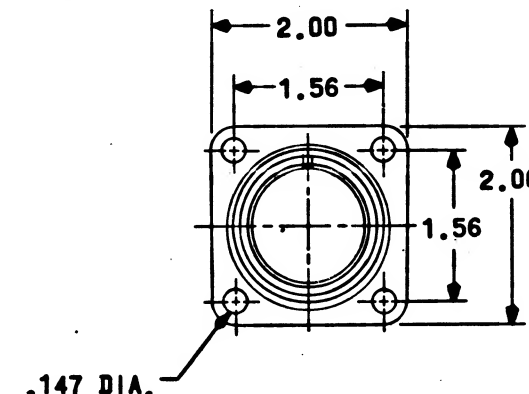
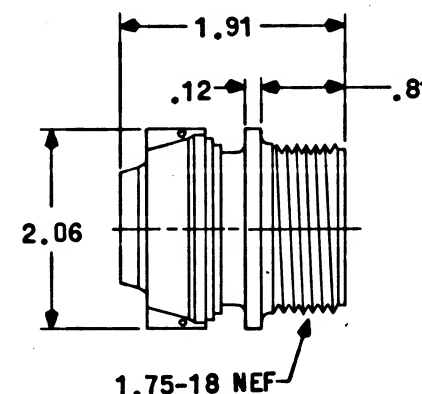
PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

1819101

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL

FOR INFORMATION ONLY

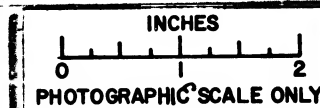
CLASS B RELEASE TDR No. 04436 DATE 11/5/63



MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497			
MANNED SPACECRAFT CENTER HOUSTON, TEXAS			
DRAWN: <i>Pittman</i> DATE 25 OCT 63 CHECKED: <i>Ed Foster</i> 28 OCT 63 APPROVAL: <i>Ed Foster</i> 28 OCT 63			
APPROVAL: <i>E. Johnson</i> 4/5/63			
NASA APPROVAL: <i>[Signature]</i>			
MIT APPROVAL: <i>[Signature]</i> 5 Nov 63			
SCALE NONE WT			
SHEET 1 OF 1			

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON		
FRACTIONS	DECIMALS	ANGLES
±	±.02	±
DO NOT SCALE THIS DRAWING		
MATERIAL		
SEE REQUIREMENTS		
HEAT TREATMENT		
NONE		
FINAL FINISH		
NONE		
NEXT ASSY	USED ON	
APPLICATION		



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PER ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- LEAD DATA: KOVAR WITH GOLD PLATING
- MARKING: THE MANUFACTURER'S NAME, TRADEMARK OR CODE; MANUFACTURER'S TYPE DESIGNATION; SHALL BE PERMANENTLY AND LEGIBLY MARKED ON THE PART.
- MECHANICAL DIMENSIONS PER OUTLINE SHOWN.

B. ELECTRICAL CHARACTERISTICS: PER TABLE II.

- STATIC FORWARD CURRENT TRANSFER RATIO (h_{FE})
- COLLECTOR CUTOFF CURRENT (I_{CBO}) AT $T_C = 100^\circ\text{C}$
- COLLECTOR SATURATION VOLTAGE ($V_{CE(SAT)}$) AT $T_C = 25^\circ\text{C}$
- SWITCHBACK VOLTAGE (V_{VCEO})

3. DESIGN REQUIREMENTS:

A. STORAGE TEMPERATURE: -65°C TO $+200^\circ\text{C}$

B. ELECTRICAL RATING: PER TABLE I

C. ELECTRICAL SPECIFICATIONS: PER TABLE II

D. POWER DISSIPATION:

- AT 25°C CASE TEMPERATURE: 1.2 WATTS MAXIMUM
THERMAL RESISTANCE (θ_{JC}): 145°C/WATT MAXIMUM
- AT 25°C AMBIENT TEMPERATURE: 360 MILLIWATTS MAXIMUM
THERMAL RESISTANCE (θ_{JA}): 485°C/WATT MAXIMUM

4. SPECIAL CONDITIONING BY SUPPLIER:

A. BURN IN: UNITS SHALL BE BURNED-IN FOR A MINIMUM OF 240 HOURS AT THE FOLLOWING CONDITIONS.

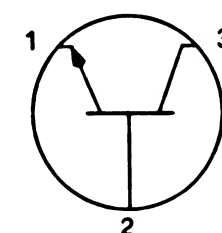
- AMBIENT TEMPERATURE: $+25^\circ\text{C}$; $+10^\circ\text{C}$; -0°C
- COLLECTOR VOLTAGE V_{CE} : 10 VDC
- POWER DISSIPATION: 225 MW

B. THE MANUFACTURER SHALL DETERMINE AND RECORD THE FOLLOWING ELECTRICAL CHARACTERISTICS AT 240 HOURS.

- COLLECTOR CUTOFF CURRENT (I_{CBO}) AT $T_C = 25^\circ\text{C}$
- COLLECTOR SATURATION VOLTAGE, $V_{CE(SAT)}$
- STATIC FORWARD CURRENT TRANSFER RATIO, AT $I_C = 10\text{ MA}$

C. UNITS FAILING TO MEET INITIAL DRAWING REQUIREMENTS FOLLOWING BURN-IN SHALL NOT BE ACCEPTABLE. TEST DATA OF FINAL READING SHALL BE SUBMITTED WITH EACH SHIPMENT AND SHALL INCLUDE UNITS THAT FAIL DURING BURN-IN.

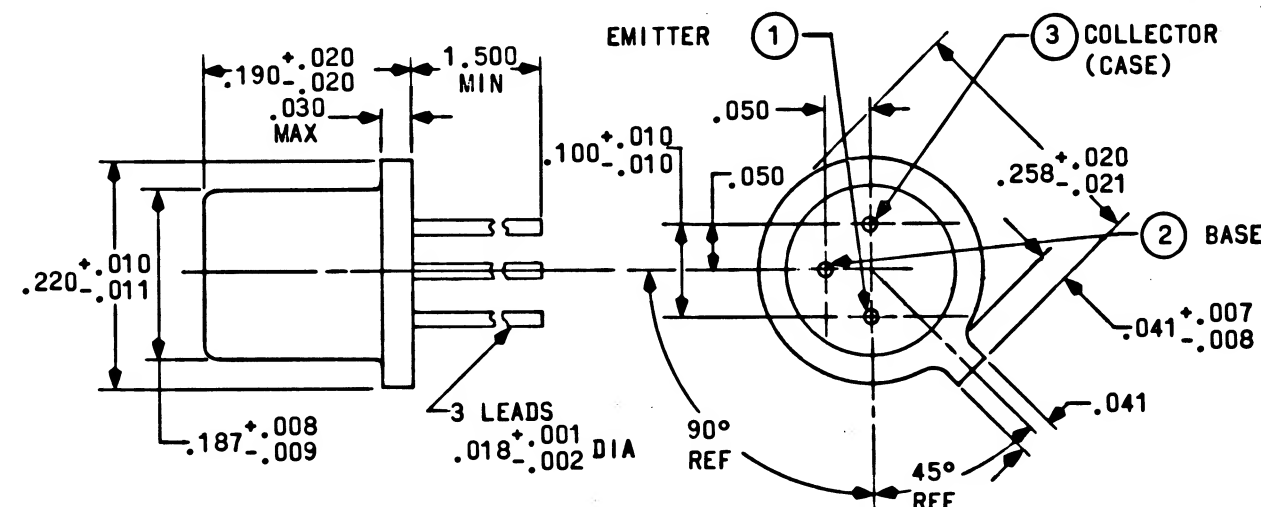
2819101



GRAPHICAL SYMBOL

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04436 DATE 11/1/63



REPLACED WITH CHANGE BY REV B

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>W. J. Smith</i> DATE 2/20/63 CHECKED <i>W. J. Smith</i> DATE 2/20/63 APPROVAL <i>W. J. Smith</i> DATE 2/20/63 APPROVAL <i>W. J. Smith</i> DATE 2/20/63		TRANSISTOR, (NPN, HIGH SPEED SWITCH, SILICON)	
NASA APPROVAL <i>W. J. Smith</i> MIT APPROVAL <i>W. J. Smith</i>		SPECIFICATION CONTROL DRAWING CODE IDENT NO. SIZE C 1016182	
SCALE NONE WT		SHEET 1 OF 2	

SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

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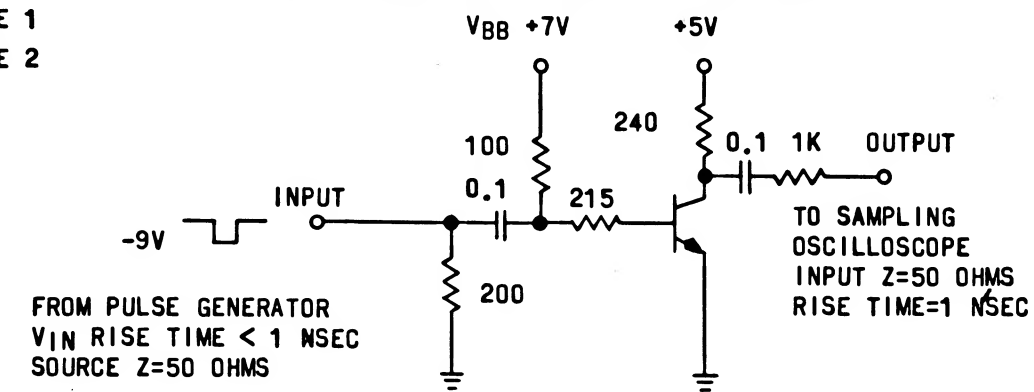
TABLE I

MANUFACTURER'S ABSOLUTE MAXIMUM RATING TC = 25°C					MANUFACTURER'S TYPE DESIGNATION	EIA TYPE DESIGNATION (FOR REF. ONLY)
COLLECTOR VOLTAGE (VCB)	EMITTER VOLTAGE (VEB)	COLLECTOR VOLTAGE (VCE)	COLLECTOR CURRENT IC	COLLECTOR POWER DISSIPATION		
VDC	VDC	VDC	MADC	W	TO BE ASSIGNED	2N914
40	5	20	200	1.2		

TABLE II

ELECTRICAL CHARACTERISTICS AT TC = 25°C (UNLESS OTHERWISE SPECIFIED)					
PARAMETER	CONDITIONS	SYMBOL	SPECIFICATION LIMITS		
			MIN.	MAX.	UNITS
SWITCHBACK VOLTAGE	IC=10MA IB=0	LVCEO	20	-	VOLTS
COLLECTOR CUTOFF CURRENT	VCB=20 VDC IE=0 TC=25°C	ICBO	-	20	NA
	VCB=20V IE=0 TC=100°C	ICBO	-	3.0	UA
COLLECTOR SATURATION VOLTAGE	IC=200MA IB=20MA	VCE(SAT)	-	0.7	VOLTS
COLLECTOR CAPACITANCE	VCB=10UDC IE=0	Cob	-	6	pf
STATIC FORWARD CURRENT TRANSFER RATIO	VCE=2VDC IC=100UA	hFE	15	50	-
	VCE=2VDC IC=1MA	hFE	25	75	-
	VCE=2VDC IC=10MA	hFE	35	105	-
	VCE=2VDC IC=100MA	hFE	25	90	-
CHARGE STORAGE TIME CONSTANT	IC=IB1=IB2=20MA NOTE 1	TS	-	20	N SEC
TURN-ON TIME	IC=200MA, IB1=2IB2=40MA NOTE 2	td + r	-	40	N SEC
TURN-OFF TIME	IC=200MA, IB1=2IB2=40MA NOTE 2	ts + f	-	40	N SEC
BASE VOLTAGE	IC=10MA VCE=10 VDC	VBE	-	0.8	VOLTS
EMITTER CUTOFF CURRENT	VEB=4 VDC IC=0	IEBO	-	0.1	UA
BETA CUTOFF FREQ	IC=1MA VCE=10 VDC	f e	1.0	-	MC
SATURATION VOLTAGE	IC=10IB, IC=1-10MA, TA=-55 TO 125°C	VCE(SAT)	-	.25	VOLTS

FIGURE 1
CHARGE STORAGE TIME - CONSTANT TEST CIRCUIT

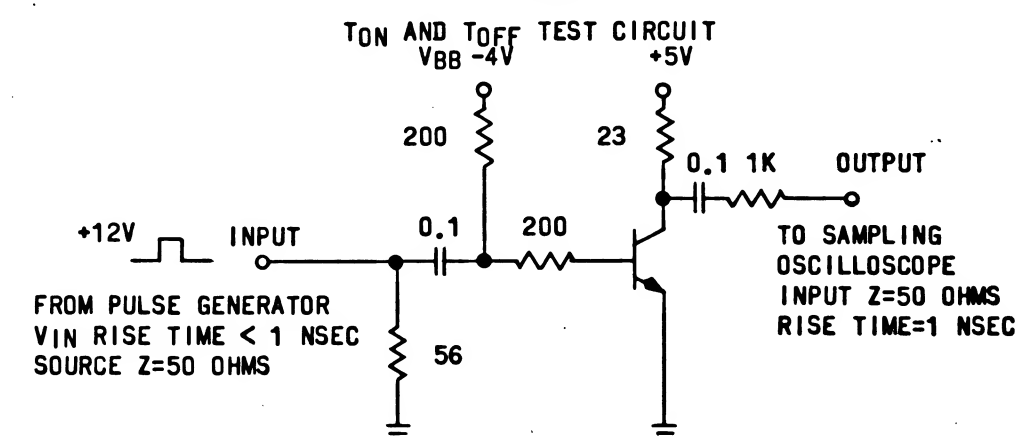


NOTE 1: TEST PER FIGURE 1
NOTE 2: TEST PER FIGURE 2

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04436 DATE 11/1/62

FIGURE 2



REPLACED WITH CHANGE BY REV B

QTY REQD		PART OR IDENTIFYING NO.		NOMENCLATURE OR DESCRIPTION		FIND NO.		
LIST OF MATERIALS								
MIT INSTRUMENTATION LAB CAMBRIDGE MASS CONTRACT NAS 9-497			MANNED SPACECRAFT CENTER HOUSTON, TEXAS					
DRAWN <i>D. S. S. 11/5/63</i> CHECKED <i>C. Wilson 11/5/63</i> APPROVAL <i>E. K. Blum 11/5/63</i> APPROVAL <i>L. G. Simon 11/5/63</i>			TRANSISTOR, (NPN, HIGH SPEED SWITCH, SILICON)					
HEAT TREATMENT _____ FINAL FINISH _____			SPECIFICATION CONTROL DRAWING CODE IDENT NO. _____ SIZE _____ NASA DRAWING NO. _____					
NEXT ASSY _____ USED ON _____ APPLICATION _____			NASA APPROVAL <i>[Signature]</i> MIT APPROVAL <i>[Signature]</i>					
			SCALE _____ WT _____ SHEET 2 OF 2					

1016182

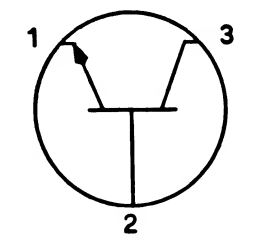
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2819101

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	REPLACES REV. A WITH CHANGE PER CM-196950 REVISED PER TDR 08534	17-APR-64 5-14-64	J.B. W/C

REQUIREMENTS:

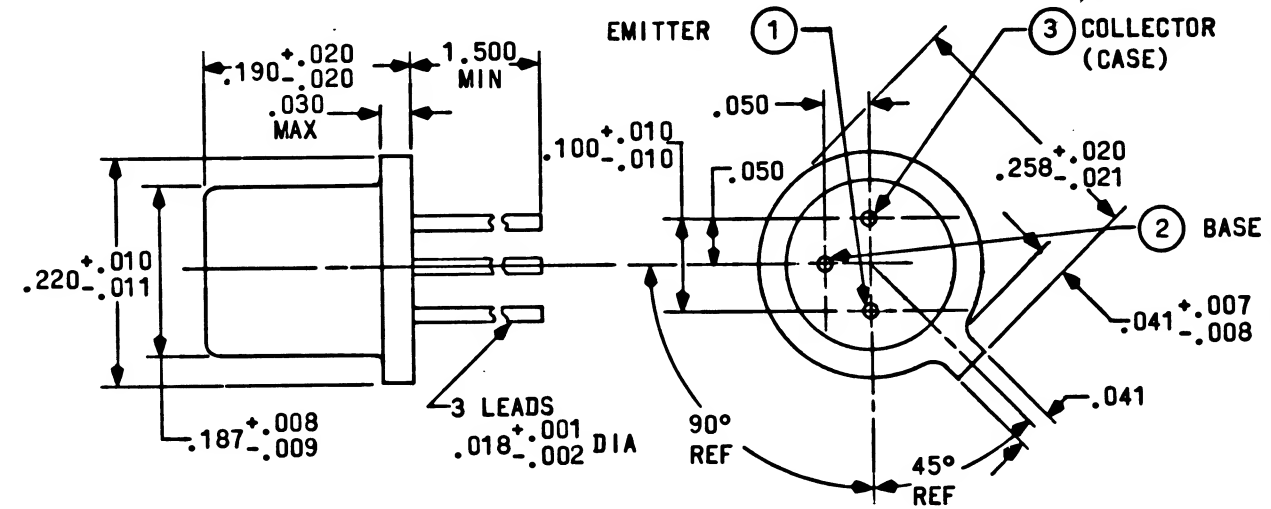
- GENERAL:
 - INTERPRET DRAWING SYMBOLS ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
 - SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PER ND 1015404, CLASS 3.
- INSPECTION AND ACCEPTANCE:
 - MECHANICAL REQUIREMENTS:
 - LEAD DATA: KOVAR WITH GOLD PLATING
 - MARKING: THE MANUFACTURER'S NAME, TRADEMARK OR CODE, NASA DRAWING NUMBER (WHICH SHALL CONSIST OF AT LEAST THE LAST THREE DIGITS), AND REVISION LETTER SHALL BE PERMANENTLY AND LEGIBLY MARKED ON THE PART. THE MANUFACTURER'S TYPE DESIGNATION MAY APPEAR ON THE PART OR PACKAGE.
 - MECHANICAL DIMENSIONS PER OUTLINE SHOWN.
 - ELECTRICAL CHARACTERISTICS: PER TABLE II.
 - STATIC FORWARD CURRENT TRANSFER RATIO (hFE)
 - COLLECTOR CUTOFF CURRENT (ICBO) AT TC = 100°C
 - COLLECTOR SATURATION VOLTAGE (VCE(SAT)) AT TC = 25°C
 - SWITCHBACK VOLTAGE (LVCEO)
- DESIGN REQUIREMENTS:
 - STORAGE TEMPERATURE: -65°C TO +200°C
 - ELECTRICAL RATING: PER TABLE I
 - ELECTRICAL SPECIFICATIONS: PER TABLE II
 - POWER DISSIPATION:
 - AT 25°C CASE TEMPERATURE: 1.2 WATTS MAXIMUM
 - THERMAL RESISTANCE (θJC): 145°C/WATT MAXIMUM
 - AT 25°C AMBIENT TEMPERATURE: 360 MILLIWATTS MAXIMUM
 - THERMAL RESISTANCE (θJA): 485°C/WATT MAXIMUM
- SPECIAL CONDITIONING BY SUPPLIER:
 - BURN IN: UNITS SHALL BE BURNED-IN FOR A MINIMUM OF 240 HOURS AT THE FOLLOWING CONDITIONS.
 - AMBIENT TEMPERATURE: +25°C; +10°C, -0°C
 - COLLECTOR VOLTAGE VCE: 10 VDC
 - POWER DISSIPATION: 225 MW
 - THE MANUFACTURER SHALL DETERMINE AND RECORD THE FOLLOWING ELECTRICAL CHARACTERISTICS AT 240 HOURS.
 - COLLECTOR CUTOFF CURRENT (ICBO) AT TC = 25°C
 - COLLECTOR SATURATION VOLTAGE, VCE(SAT)
 - STATIC FORWARD CURRENT TRANSFER RATIO, AT IC = 10 MA
 - UNITS FAILING TO MEET INITIAL DRAWING REQUIREMENTS FOLLOWING BURN-IN SHALL NOT BE ACCEPTABLE. TEST DATA OF FINAL READING SHALL BE SUBMITTED WITH EACH SHIPMENT AND SHALL INCLUDE UNITS THAT FAIL DURING BURN-IN.



GRAPHICAL SYMBOL

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04436 DATE 1/5/63



REPLACES REV A WITH CHANGE

B	B
SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN DOBBERT 28-OCT-63 CHECKED WILSON 29-OCT-63 APPROVAL G. BLECK 30-OCT-63 APPROVAL J. Johnson 7/12/64		TRANSISTOR, (NPN, HIGH SPEED SWITCH, SILICON)	
NASA APPROVAL C. M. Jones 9/15/64 MIT APPROVAL W. S. Jones 10/14/64		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE FINAL FINISH NONE		CODE IDENT NO. C SCALE NONE WT	NASA DRAWING NO. 1016182 SHEET 1 OF 2

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFERRING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

TABLE I

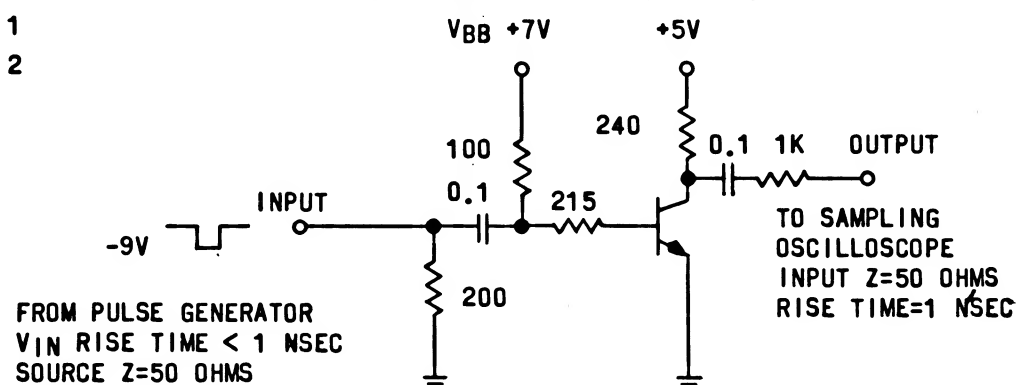
MANUFACTURER'S ABSOLUTE MAXIMUM RATING TC = 25°C					MANUFACTURER'S TYPE DESIGNATION	EIA TYPE DESIGNATION (FOR REF. ONLY)
COLLECTOR VOLTAGE (VCB)	EMITTER VOLTAGE (VEB)	COLLECTOR VOLTAGE (VCE)	COLLECTOR CURRENT IC	COLLECTOR POWER DISSIPATION		
VDC	VDC	VDC	MA DC	W	S7132	2N914
40	5	20	200	1.2		

TABLE II

ELECTRICAL CHARACTERISTICS AT TC = 25°C (UNLESS OTHERWISE SPECIFIED)					
PARAMETER	CONDITIONS	SYMBOL	SPECIFICATION LIMITS		
			MIN.	MAX.	UNITS
SWITCHBACK VOLTAGE	IC=10MA IB=0	LVCEO	20	-	VOLTS
COLLECTOR CUTOFF CURRENT	VCB=20 VDC IE=0 TC=25°C	ICBO	-	20	NA
	VCB=20V IE=0 TC=100°C	ICBO	-	3.0	UA
COLLECTOR SATURATION VOLTAGE	IC=200MA IB=20MA	VCE(SAT)	-	0.7	VOLTS
COLLECTOR CAPACITANCE	VCB=10VDC IE=0	Cob	-	6	pf
STATIC FORWARD CURRENT TRANSFER RATIO	VCE=2VDC IC=100UA	hFE	15	50	-
	VCE=2VDC IC=1MA	hFE	25	75	-
	VCE=2VDC IC=10MA	hFE	35	105	-
	VCE=2VDC IC=100MA	hFE	25	90	-
CHARGE STORAGE TIME CONSTANT	IC=IB1=IB2=20MA NOTE 1	TS	-	20	N SEC
TURN-ON TIME	IC=200MA, IB1=2IB2=40MA NOTE 2	td + r	-	40	N SEC
TURN-OFF TIME	IC=200MA, IB1=2IB2=40MA NOTE 2	ts + f	-	40	N SEC
BASE VOLTAGE	IC=10MA VCE=10 VDC	VBE	-	0.8	VOLTS
EMITTER CUTOFF CURRENT	VEB=4 VDC IC=0	IEBO	-	0.1	UA
BETA CUTOFF FREQ	IC=1MA VCE=10 VDC	f e	1.0	-	MC
SATURATION VOLTAGE	IC=10IB, IC=1-10MA, TA=-55 TO 125°C	VCE(SAT)	-	.25	VOLTS

FIGURE 1

CHARGE STORAGE TIME - CONSTANT TEST CIRCUIT

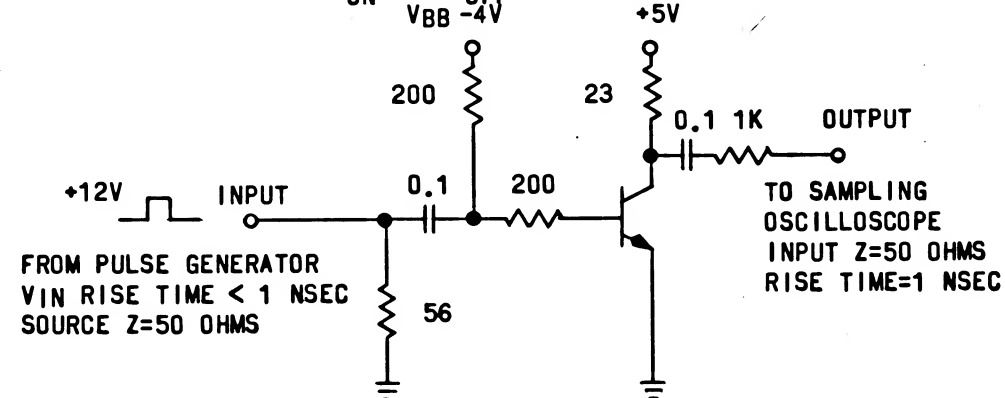


FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04426 DATE 11/5/63

FIGURE 2

TON AND TOFF TEST CIRCUIT



REPLACES REV A WITH CHANGE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
		LIST OF MATERIALS	
	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>WILSON</i>	DATE <i>29-OCT-63</i>	TRANSISTOR, (NPN, HIGH SPEED SWITCH, SILICON)	
CHECKED <i>WILSON</i>	DATE <i>29-OCT-63</i>		
APPROVAL <i>G. BLECK</i>	DATE <i>30-OCT-63</i>		
APPROVAL <i>L. Friedman</i>	DATE <i>1/18/64</i>		
NASA APPROVAL <i>C. P. ...</i>	DATE <i>4/15/64</i>		
MIT APPROVAL <i>W. H. ...</i>	DATE <i>1/18/64</i>		
		SPECIFICATION CONTROL DRAWING	
		CODE IDENT NO. SIZE	NASA DRAWING NO.
		C	1016182
		SCALE	WT
			SHEET 2 OF 2

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA, IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREIN.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PER MIL-Q-9858.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- LEAD DATA: KOVAR WITH GOLD PLATING
- MARKING: THE MANUFACTURER'S NAME, TRADEMARK OR CODE, NASA DRAWING NUMBER (WHICH SHALL CONSIST OF AT LEAST THE LAST THREE DIGITS AND DASH NUMBER), AND REVISION LETTER SHALL BE PERMANENTLY AND LEGIBLY MARKED ON THE PART. THE MANUFACTURER'S TYPE DESIGNATION MAY APPEAR ON THE PART OR PACKAGE. DASH NUMBER 000 NEED NOT APPEAR ON THE PART.
- MECHANICAL DIMENSIONS PER OUTLINE SHOWN.

B. ELECTRICAL CHARACTERISTICS: PER TABLE II A AND B.

- STATIC FORWARD CURRENT TRANSFER RATIO (h_{FE})
- COLLECTOR CUTOFF CURRENT (I_{CBO}) AT $T_C = 100^\circ\text{C}$
- COLLECTOR SATURATION VOLTAGE ($V_{CE(SAT)}$) AT $T_C = 25^\circ\text{C}$
- SWITCHBACK VOLTAGE (LV_{CEO})

3. DESIGN REQUIREMENTS:

A. STORAGE TEMPERATURE: -65°C TO $+200^\circ\text{C}$

B. ELECTRICAL RATING: PER TABLE I

C. ELECTRICAL SPECIFICATIONS: PER TABLE II A AND B.

D. POWER DISSIPATION:

- AT 25°C CASE TEMPERATURE: 1.2 WATTS MAXIMUM
 - THERMAL RESISTANCE (θ_{JC}): $145^\circ\text{C}/\text{WATT}$ MAXIMUM
- AT 25°C AMBIENT TEMPERATURE: 360 MILLIWATTS MAXIMUM
 - THERMAL RESISTANCE (θ_{JA}): $485^\circ\text{C}/\text{WATT}$ MAXIMUM

4. SPECIAL CONDITIONING BY SUPPLIER:

A. BURN IN: UNITS SHALL BE BURNED-IN FOR A MINIMUM OF 240 HOURS AT THE FOLLOWING CONDITIONS.

- AMBIENT TEMPERATURE: $+25^\circ\text{C}$; $+10^\circ\text{C}$, -0°C
- COLLECTOR VOLTAGE V_{CE} : 10 VDC
- POWER DISSIPATION: 225 MW

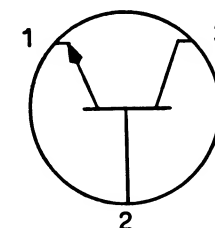
B. THE MANUFACTURER SHALL DETERMINE AND RECORD THE FOLLOWING ELECTRICAL CHARACTERISTICS AT 240 HOURS.

- COLLECTOR CUTOFF CURRENT (I_{CBO}) AT $T_C = 25^\circ\text{C}$
- COLLECTOR SATURATION VOLTAGE, $V_{CE(SAT)}$
- STATIC FORWARD CURRENT TRANSFER RATIO, AT $I_C = 10\text{ MA}$

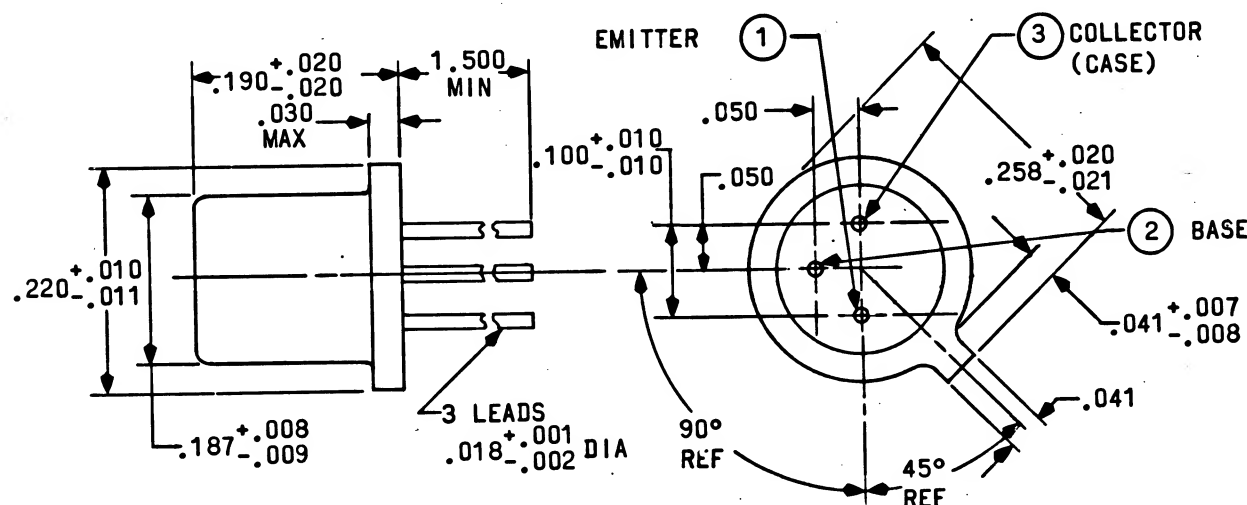
C. UNITS FAILING TO MEET INITIAL DRAWING REQUIREMENTS FOLLOWING BURN-IN SHALL NOT BE ACCEPTABLE. TEST DATA OF FINAL READING SHALL BE SUBMITTED WITH EACH SHIPMENT AND SHALL INCLUDE UNITS THAT FAIL DURING BURN-IN.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

2819101



GRAPHICAL SYMBOL



REPLACES REV A WITH CHANGE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN DOBBERT 28-OCT-63 CHECKED WILSON 29-OCT-63 APPROVAL G. BLECK 30-OCT-63 APPROVAL J. J. J. 31-OCT-63		TRANSISTOR, (NPN, HIGH SPEED SWITCH, SILICON)	
NASA APPROVAL C. M. J. 31-OCT-63 MIT APPROVAL W. J. J. 31-OCT-63		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		CODE IDENT NO.	NASA DRAWING NO.
FINAL FINISH NONE		C	1016182
APPLICATION		SCALE NONE	WT
		SHEET 1 OF 2	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFIRMING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

TABLE I

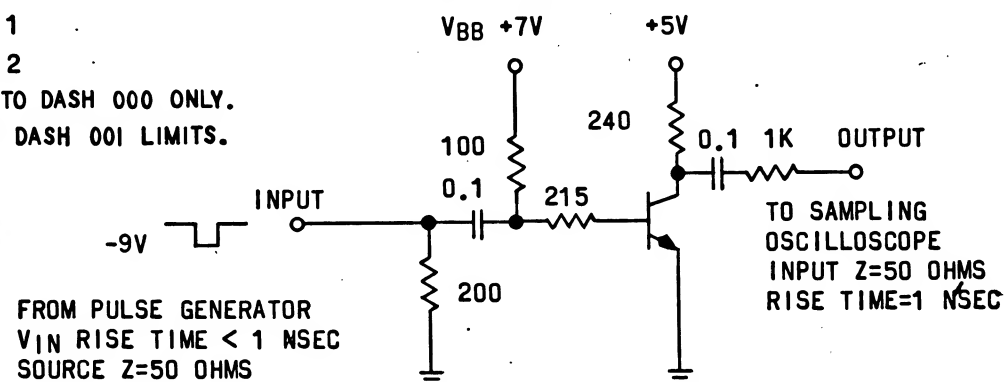
DASH NUMBER	MANUFACTURER'S ABSOLUTE MAXIMUM RATING TC = 25°C					MANUFACTURER'S TYPE DESIGNATION	EIA TYPE DESIGNATION (FOR REF. ONLY)
	COLLECTOR VOLTAGE (VCB)	EMITTER VOLTAGE (VEB)	COLLECTOR VOLTAGE (VCE)	COLLECTOR CURRENT IC	COLLECTOR POWER DISSIPATION		
	VDC	VDC	VDC	MADC	W		
000	40	5	20	200	1.2	S7132	2N914
001	35	5	17.5	200	1.2		2N914

TABLE II A

ELECTRICAL CHARACTERISTICS AT TC = 25°C (UNLESS OTHERWISE SPECIFIED)					
PARAMETER	CONDITIONS	SYMBOL	SPECIFICATION LIMITS		
			MIN.	MAX.	UNITS
SWITCHBACK VOLTAGE-SEE NOTE 3	IC=10MA IB=0	LVCEO	20	-	VOLTS
COLLECTOR CUTOFF CURRENT	VCB=20 VDC IE=0 TC=25°C	ICBO	-	20	NA
	VCB=20V IE=0 TC=100°C	ICBO	-	3.0	UA
COLLECTOR SATURATION VOLTAGE	IC=200MA IB=20MA	VCE(SAT)		0.7	VOLTS
COLLECTOR CAPACITANCE	VCB=10VDC IE=0	Cob	-	6	pf
STATIC FORWARD CURRENT TRANSFER RATIO-SEE NOTE 3	VCE=2VDC IC=100UA	hFE	15	50	-
	VCE=2VDC IC=1MA	hFE	25	75	-
	VCE=2VDC IC=10MA	hFE	35	105	-
	VCE=2VDC IC=100MA	hFE	25	90	-
CHARGE STORAGE TIME CONSTANT	IC=IB1=IB2=20MA NOTE 1	TS	-	20	N SEC
TURN-ON TIME	IC=200MA, IB1=2IB2=40MA NOTE 2	td + r	-	40	N SEC
TURN-OFF TIME	IC=200MA, IB1=2IB2=40MA NOTE 2	ts + f	-	40	N SEC
BASE VOLTAGE	IC=10MA VCE=10 VDC	VBE	-	0.8	VOLTS
EMITTER CUTOFF CURRENT	VEB=4 VDC IC=0	IEBO	-	0.1	UA
BETA CUTOFF FREQ	IC=1MA VCE=10 VDC	f e	1.0	-	MC
SATURATION VOLTAGE	IC=10IB, IC=1-10MA, TA=-55 TO 125°C	VCE(SAT)	-	.25	VOLTS

FIGURE 1

CHARGE STORAGE TIME - CONSTANT TEST CIRCUIT



NOTE 1: TEST PER FIGURE 1
NOTE 2: TEST PER FIGURE 2
NOTE 3: LIMITS APPLICABLE TO DASH 000 ONLY.
SEE TABLE II B FOR DASH 001 LIMITS.

NOTE 4: DASH 001 SHALL MEET ALL REQUIREMENTS OF TABLE II A WITH THE EXCEPTION THAT SWITCHBACK VOLTAGE AND STATIC FORWARD CURRENT TRANSFER RATIO SHALL MEET THE REQUIREMENTS OF TABLE II B.

2819101

REVISIONS

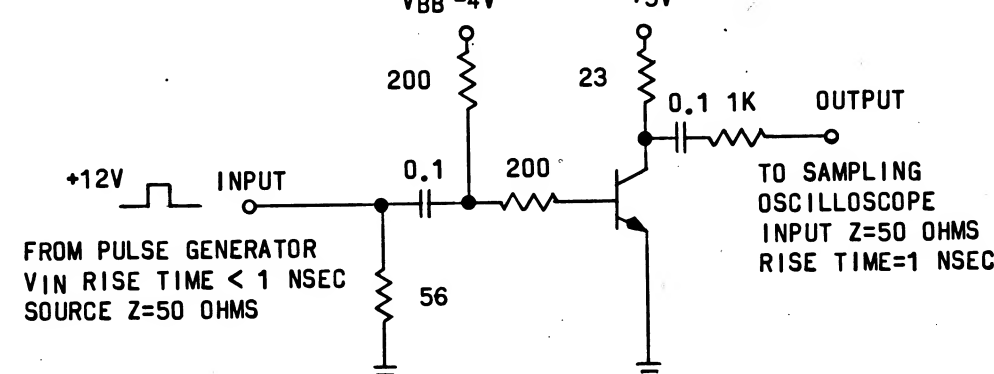
SYM	DESCRIPTION	DATE	APPROVAL
B	REPLACES REV. A WITH CHANGE PER CM-196950 REVISED PER TDR 08534	17-APR-64 5-19-64	J.B. EF WJR
C	REVISED & UPGRADED TO CLASS A PER TDR 21265	2 AUG 65	WJR EF

TABLE II B

ELECTRICAL CHARACTERISTICS AT TC=25°C					
PARAMETER	CONDITION	SYMBOL	SPECIFICATION LIMITS		
			MIN	MAX	UNITS
SWITCH BACK VOLTAGE	IC=10MA IB=0	LVCEO	17.5		VOLTS
STATIC FORWARD CURRENT TRANSFER RATIO	VCE=2VDC IC=100UA	hFE	15	60	
	VCE=2VDC IC=1 MA	hFE	25	90	
	VCE=2VDC IC=10MA	hFE	35	110	
	VCE=2VDC IC=100MA	hFE	25	90	

FIGURE 2

TON AND TOFF TEST CIRCUIT



REPLACES REV A WITH CHANGE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>[Signature]</i> DATE 20-1-63 CHECKED <i>[Signature]</i> WILSON 29-OCT-63 APPROVAL <i>[Signature]</i> G. BLECK 30-OCT-63 APPROVAL <i>[Signature]</i> 3/14/64		TRANSISTOR, (NPN, HIGH SPEED SWITCH, SILICON)	
NASA APPROVAL <i>[Signature]</i> 4/15/64 MIT APPROVAL <i>[Signature]</i> 1/14/64		SPECIFICATION CONTROL DRAWING NASA DRAWING NO. 1016182	
SCALE		WT	SHEET 2 OF 2

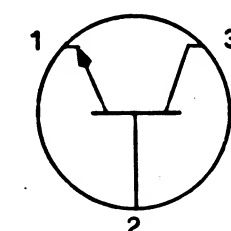
NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWING, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY APPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OF PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

REQUIREMENTS:

1. GENERAL:
 - A. INTERPRET DRAWING SYMBOLS ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
 - B. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PER ND 1015404, CLASS 3.
2. INSPECTION AND ACCEPTANCE:
 - A. MECHANICAL REQUIREMENTS:
 - (1) LEAD DATA: KOVAR WITH GOLD PLATING
 - (2) MARKING: THE MANUFACTURER'S NAME, TRADEMARK OR CODE; MANUFACTURER'S TYPE DESIGNATION; SHALL BE PERMANENTLY AND LEGIBLY MARKED ON THE PART.
 - (3) MECHANICAL DIMENSIONS PER OUTLINE SHOWN.
 - B. ELECTRICAL CHARACTERISTICS: PER TABLE II.
 - (1) STATIC FORWARD CURRENT TRANSFER RATIO (hFE)
 - (2) COLLECTOR CUTOFF CURRENT (ICBO) AT TC = 100°C
 - (3) COLLECTOR SATURATION VOLTAGE (VCE(SAT)) AT TC = 25°C
 - (4) SWITCHBACK VOLTAGE (LVCEO)
3. DESIGN REQUIREMENTS:
 - A. STORAGE TEMPERATURE: -65°C TO +200°C
 - B. ELECTRICAL RATING: PER TABLE I
 - C. ELECTRICAL SPECIFICATIONS: PER TABLE II
 - D. POWER DISSIPATION:
 - (1) AT 25°C CASE TEMPERATURE: 1.2 WATTS MAXIMUM
THERMAL RESISTANCE (θJC): 145°C/WATT MAXIMUM
 - (2) AT 25°C AMBIENT TEMPERATURE: 360 MILLIWATTS MAXIMUM
THERMAL RESISTANCE (θJA): 485°C/WATT MAXIMUM
4. SPECIAL CONDITIONING BY SUPPLIER:
 - A. BURN IN: UNITS SHALL BE BURNED-IN FOR A MINIMUM OF 240 HOURS AT THE FOLLOWING CONDITIONS.
 - (1) AMBIENT TEMPERATURE: +25°C; +10°C, -0°C
 - (2) COLLECTOR VOLTAGE VCE: 10 VDC
 - (3) POWER DISSIPATION: 225 MW
 - B. THE MANUFACTURER SHALL DETERMINE AND RECORD THE FOLLOWING ELECTRICAL CHARACTERISTICS AT 240 HOURS.
 - (1) COLLECTOR CUTOFF CURRENT (ICBO) AT TC = 25°C
 - (2) COLLECTOR SATURATION VOLTAGE, VCE(SAT)
 - (3) STATIC FORWARD CURRENT TRANSFER RATIO, AT IC = 10 MA
 - C. UNITS FAILING TO MEET INITIAL DRAWING REQUIREMENTS FOLLOWING BURN-IN SHALL NOT BE ACCEPTABLE. TEST DATA OF FINAL READING SHALL BE SUBMITTED WITH EACH SHIPMENT AND SHALL INCLUDE UNITS THAT FAIL DURING BURN-IN.

2819101

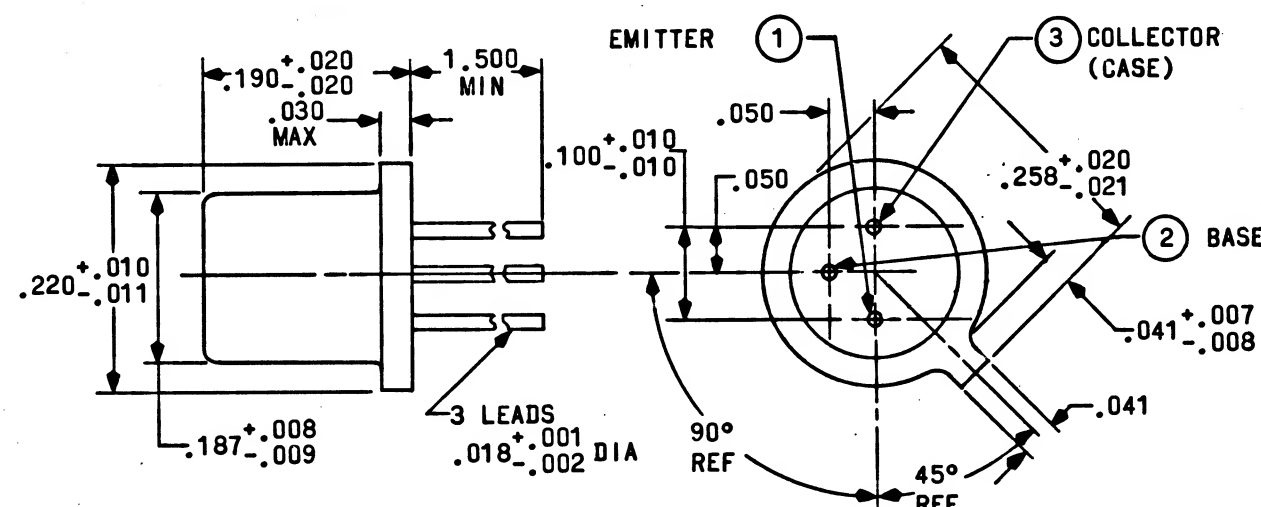
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL



GRAPHICAL SYMBOL

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CLASS B RELEASE TDR No. 04436 DATE 11/5/63

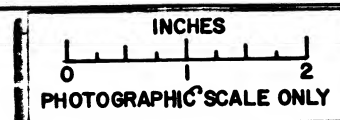


SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
TOLERANCES ON	
FRACTIONS	DECIMALS ANGLES
±	±.005 ±
DO NOT SCALE THIS DRAWING	
MATERIAL	
SEE REQUIREMENTS	
HEAT TREATMENT	
NONE	
FINAL FINISH	
NONE	
NEXT ASSY	USED ON
APPLICATION	

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <u>A. D. M. P.</u> DATE <u>20 OCT 63</u> CHECKED <u>C. W. L. L.</u> DATE <u>29 OCT 63</u> APPROVAL <u>B. K. B. L.</u> DATE <u>30 OCT 63</u> APPROVAL <u>L. G. L. M.</u> DATE <u>11/5/63</u>		TRANSISTOR, (NPN, HIGH SPEED SWITCH, SILICON)	
NASA APPROVAL <u>[Signature]</u> MIT APPROVAL <u>[Signature]</u>		SPECIFICATION CONTROL DRAWING	
CODE IDENT NO. SIZE C		NASA DRAWING NO. 1016182	
SCALE NONE WT		SHEET 1 OF 2	



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TABLE I

MANUFACTURER'S ABSOLUTE MAXIMUM RATING TC = 25°C					MANUFACTURER'S TYPE DESIGNATION	EIA TYPE DESIGNATION (FOR REF. ONLY)
COLLECTOR VOLTAGE (VCB)	EMITTER VOLTAGE (VEB)	COLLECTOR VOLTAGE (VCE)	COLLECTOR CURRENT IC	COLLECTOR POWER DISSIPATION		
VDC	VDC	VDC	MADC	W	TO BE ASSIGNED	2N914
40	5	20	200	1.2		

TABLE II

ELECTRICAL CHARACTERISTICS AT TC = 25°C (UNLESS OTHERWISE SPECIFIED)

PARAMETER	CONDITIONS	SYMBOL	SPECIFICATION LIMITS		
			MIN.	MAX.	UNITS
SWITCHBACK VOLTAGE	IC=10MA IB=0	LVCEO	20	-	VOLTS
COLLECTOR CUTOFF CURRENT	VCE=20 VDC IE=0 TC=25°C	ICBO	-	20	NA
	VCE=20V IE=0 TC=100°C	ICBO	-	3.0	UA
COLLECTOR SATURATION VOLTAGE	IC=200MA IB=20MA	VCE(SAT)	-	0.7	VOLTS
COLLECTOR CAPACITANCE	VCE=10VDC IE=0	Cob	-	6	pf
STATIC FORWARD CURRENT TRANSFER RATIO	VCE=2VDC IC=100UA	hFE	15	50	-
	VCE=2VDC IC=1MA	hFE	25	75	-
	VCE=2VDC IC=10MA	hFE	35	105	-
	VCE=2VDC IC=100MA	hFE	25	90	-
CHARGE STORAGE TIME CONSTANT	IC=IB1=IB2=20MA NOTE 1	TS	-	20	N SEC
TURN-ON TIME	IC=200MA, IB1=2IB2=40MA NOTE 2	td + r	-	40	N SEC
TURN-OFF TIME	IC=200MA, IB1=2IB2=40MA NOTE 2	ts + f	-	40	N SEC
BASE VOLTAGE	IC=10MA VCE=10 VDC	VBE	-	0.8	VOLTS
EMITTER CUTOFF CURRENT	VEB=4 VDC IC=0	IEBO	-	0.1	UA
BETA CUTOFF FREQ	IC=1MA VCE=10 VDC	f e	1.0	-	MC
SATURATION VOLTAGE	IC=10IB, IC=1-10MA, TA=-55 TO 125°C	VCE(SAT)	-	.25	VOLTS

FIGURE 1

CHARGE STORAGE TIME - CONSTANT TEST CIRCUIT

NOTE 1: TEST PER FIGURE 1
NOTE 2: TEST PER FIGURE 2

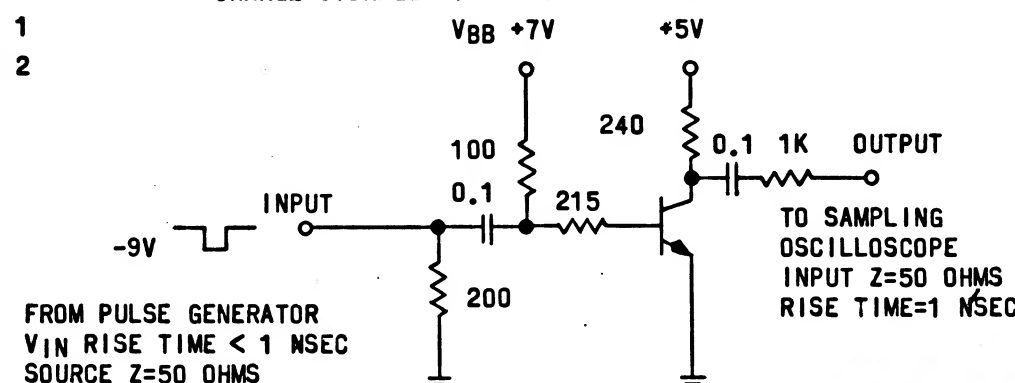
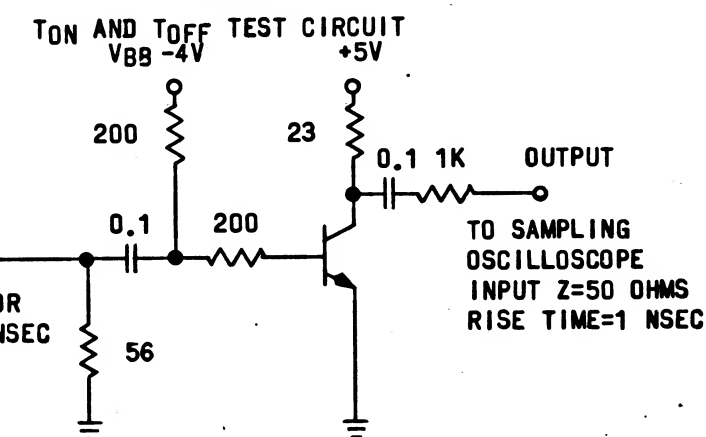


FIGURE 2



FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 0-6136 DATE 11/1/83

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>[Signature]</i> DATE 2/20/63 CHECKED <i>[Signature]</i> 2/20/63 APPROVAL <i>[Signature]</i> 3/20/63 APPROVAL <i>[Signature]</i> 11/5/63		TRANSISTOR, (NPN, HIGH SPEED SWITCH, SILICON)	
NASA APPROVAL <i>[Signature]</i> MIT APPROVAL <i>[Signature]</i>		SPECIFICATION CONTROL DRAWING NASA DRAWING NO. 1016182 SIZE C SCALE WT SHEET 2 OF 2	

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFERRING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL, ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

GENERAL:

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.

EACH CONTAINER OF RESIN SHALL BE LABELED WITH THE MANUFACTURER'S NAME, MANUFACTURER'S DESIGNATION, MIXING RATIO, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS, AND DATE OF MANUFACTURE.

ACCEPTANCE AND INSPECTION:

MATERIAL DESCRIPTION: THIS MATERIAL SHALL BE SUPPLIED AS A CLEAR RESIN. WHEN MIXED WITH SCD 1016193 ACCORDING TO THE VENDOR'S INSTRUCTIONS THE MATERIAL SHALL PRODUCE A RIGID, PREDOMINANTLY CLOSED CELL POLYURETHANE FOAM.

APPEARANCE: THE FOAM CURED IN A 20 ± 2 GRAM QUANTITY IN A NON-WAXED PAPER CUP SHALL BE UNIFORMLY WHITE IN COLOR, SHALL EXHIBIT NO EXCESSIVE VOIDS, AND SHALL HAVE A UNIFORM CELL STRUCTURE; THE FOAM SURFACE SHALL BE FIRM AND TACK FREE AND SHALL NOT FLAKE UNDER NORMAL HANDLING CONDITIONS OR USE.

DENSITY: DENSITY OF A FREE BLOWN SAMPLE PREPARED BY CURING A 20 ± 2 GRAM QUANTITY OF MATERIAL IN AN UNWAXED PAPER CUP SHALL BE 2 TO 2-1/2 LBS/FT³ WHEN TESTED AS OUTLINED IN ASTM-D-1622-59T.

THERMAL CONDUCTIVITY: THE THERMAL CONDUCTIVITY OF THIS MATERIAL SHALL BE A MAXIMUM OF .15 BTU/HR/FT²/°F/INCH WHEN TESTED AS SPECIFIED IN ASTM-D-1674-59T.

DESIGN REQUIREMENTS:

APPLICATION: THIS MATERIAL SHALL BE APPLIED AS OUTLINED IN ND

SHELF LIFE: UNCURED RESIN SHALL NOT BE USED AFTER 6 MONTHS FROM THE DATE OF MANUFACTURE.

INTENDED USE: THIS MATERIAL IS INTENDED AS PART OF A SYSTEM FOR USE IN APPLICATIONS WHERE A LOW DENSITY ENCAPSULANT IS REQUIRED WHICH WILL PROVIDE GOOD THERMAL INSULATION.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

1016185

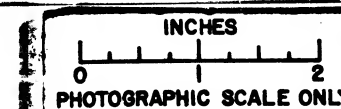
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A.	REPLACED WITH CHANGE BY REV. B PER CM194441 REVISED FOR TDR 08986 3/17/64	20 JAN 64	J. B. JAC.

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 02933 DATE 5/4/62

REPLACED WITH CHANGE BY REV B

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. NAS DWS. NO. CONTRACT 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN D. Matley DATE 23 AUG 63 CHECKED J. J. J. DATE 27 AUG 63 APPROVAL J. J. J. DATE 27 AUG 63 APPROVAL J. J. J. DATE 27 AUG 63		POLYURETHANE RESIN	
SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		CODE IDENT NO.	NASA DRAWING NO.
FINAL FINISH NONE		SIZE C	1016185
NEXT ASSY	USED ON	SCALE NONE	WT
APPLICATION		SHEET 1 OF 1	



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS AN IMPLICIT LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

REQUIREMENTS:

GENERAL:

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.

EACH CONTAINER OF RESIN SHALL BE LABELED WITH THE MANUFACTURER'S NAME, MANUFACTURER'S DESIGNATION, MIXING RATIO, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS, AND DATE OF MANUFACTURE.

ACCEPTANCE AND INSPECTION:

MATERIAL DESCRIPTION: THIS MATERIAL SHALL BE SUPPLIED AS A CLEAR RESIN. WHEN MIXED WITH SCD 1016193 ACCORDING TO THE VENDOR'S INSTRUCTIONS THE MATERIAL SHALL PRODUCE A RIGID, PREDOMINANTLY CLOSED CELL POLYURETHANE FOAM.

APPEARANCE: THE FOAM CURED IN A 20 ± 2 GRAM QUANTITY IN A NON-WAXED PAPER CUP SHALL BE UNIFORMLY WHITE IN COLOR, SHALL EXHIBIT NO EXCESSIVE VOIDS, AND SHALL HAVE A UNIFORM CELL STRUCTURE; THE FOAM SURFACE SHALL BE FIRM AND TACK FREE AND SHALL NOT FLAKE UNDER NORMAL HANDLING CONDITIONS OR USE.

DENSITY: DENSITY OF A FREE BLOWN SAMPLE PREPARED BY CURING A 20 ± 2 GRAM QUANTITY OF MATERIAL IN AN UNWAXED PAPER CUP SHALL BE 2 TO 2-1/2 LBS/FT³ WHEN TESTED AS OUTLINED IN ASTM-D-1622-59T.

THERMAL CONDUCTIVITY: THE THERMAL CONDUCTIVITY OF THIS MATERIAL SHALL BE A MAXIMUM OF .15 BTU/HR/FT²/°F/INCH WHEN TESTED AS SPECIFIED IN ASTM-D-1674-59T.

DESIGN REQUIREMENTS:

APPLICATION: THIS MATERIAL SHALL BE APPLIED AS OUTLINED IN ND

SHELF LIFE: UNCURED RESIN SHALL NOT BE USED AFTER 6 MONTHS FROM THE DATE OF MANUFACTURE.

INTENDED USE: THIS MATERIAL IS INTENDED AS PART OF A SYSTEM FOR USE IN APPLICATIONS WHERE A LOW DENSITY ENCAPSULANT IS REQUIRED WHICH WILL PROVIDE GOOD THERMAL INSULATION.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

NOTED

9819101

REVISIONS

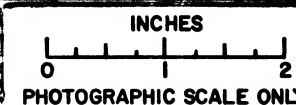
SYM	DESCRIPTION	DATE	APPROVAL
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FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 02933 DATE

5/2/62

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. NAS DWS. NO. CONTRACT 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>D. M. Kelly</i> DATE 23 AUG 63 CHECKED <i>J. J. Smith</i> 27 AUG 63 APPROVAL <i>J. J. Smith</i> 27 AUG 63 APPROVAL <i>L. J. Johnson</i> 9/4/63		POLYURETHANE RESIN	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES \pm \pm \pm DO NOT SCALE THIS DRAWING MATERIAL SEE REQUIREMENTS HEAT TREATMENT NONE FINAL FINISH NONE		SPECIFICATION CONTROL DRAWING CODE IDENT NO. SIZE NASA DRAWING NO. C 1016185 SCALE NONE WT SHEET 1 OF 1	
NEXT ASSY USED ON APPLICATION		NASA APPROVAL <i>J. J. Smith</i> 27 AUG 63 MIT APPROVAL <i>L. J. Johnson</i> 9/4/63	



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY IDENTIFIED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND IT IS A FACT THAT THE GOVERNMENT MAY HAVE FORWARDED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

9819101

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REPLACED WITH CHANGE BY REV. B PER MXC 191728 REVISED PER TDR 04645	4 NOV 63 11/19/63	J.J.J. JH

REQUIREMENTS:

GENERAL:

- INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
- SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
- EACH UNIT AND SHIPPING CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS, DATE OF MANUFACTURE, ETC.

ACCEPTANCE AND INSPECTION REQUIREMENTS:

THIS MATERIAL SHALL MEET THE REQUIREMENTS OF THE NEMA STANDARD FOR TYPE 1, CLASS 1 LAMINATED, THERMOSETTING, DECORATIVE SHEET.

PHYSICAL PROPERTIES:

- WEIGHT OF THE MATERIAL SHALL BE 0.43 ± 0.03 LBS./FT²
- THICKNESS OF THE MATERIAL SHALL BE 1/16 INCH. (0.062 \pm 0.005 INCH)
- SURFACE FINISH OF THE MATERIAL SHALL BE THE SATIN FINISH IN ACCORDANCE WITH THE NEMA STANDARD.
- COLOR OF THE MATERIAL SHALL BE THE SAME AS OR DARKER THAN COLOR NO. 26251 OF FED. STD. 595.

DESIGN REQUIREMENTS:

INTENDED USE: THE MATERIAL IS INTENDED FOR USE AS A WRITING SURFACE FOR APOLLO GROUND SUPPORT EQUIPMENT.

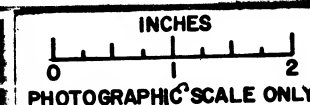
FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 03517 DATE 1 Oct 63

PROCURE ONLY FROM APPROVED SOURCE LISTED ON ND 1002034 FOR THIS DRAWING.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES \pm \pm \pm
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT NONE
		FINAL FINISH NONE
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. NAS 9- CONTRACT 407		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN SUMMERSVILLE DATE 6/22/63 CHECKED <i>W. H. Hill</i> 11 Sep 63 APPROVAL <i>R. H. Hill</i> 11 Sep 63 APPROVAL <i>E. J. Hillman</i> 9/27/63		LAMINATED THERMOSETTING DECORATIVE SHEET	
NASA APPROVAL <i>Jack Basman</i> MIT APPROVAL <i>W. H. Hill</i> 10/2/63		CODE IDENT NO. SIZE C	NASA DRAWING NO. 1016186
		SCALE NONE	WT SHEET 1 OF 1



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFIRMING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- A. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
- B. SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
- C. EACH UNIT AND SHIPPING CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS, DATE OF MANUFACTURE, ETC.

2. ACCEPTANCE AND INSPECTION REQUIREMENTS:

- A. THE MATERIAL SHALL BE A LAMINATED, THERMOSETTING SHEET WITH A DECORATIVE FINISH ON ONE SIDE.
- B. PHYSICAL PROPERTIES:
 - (1) WEIGHT OF THE MATERIAL SHALL BE 0.43 ± 0.03 LBS./FT²
 - (2) THICKNESS OF THE MATERIAL SHALL BE 1/16 INCH. (0.062 ± 0.005 INCH)
 - (3) SURFACE FINISH OF THE MATERIAL SHALL BE THE SATIN FINISH IN ACCORDANCE WITH THE NEMA STANDARD.
 - (4) COLOR OF THE MATERIAL SHALL BE THE SAME AS OR DARKER THAN COLOR NO. 26251 OF FED. STD. 595.
 - (5) WORKMANSHIP: THE MATERIAL SHALL BE UNIFORM IN APPEARANCE, TEXTURE, AND THICKNESS AND SHALL BE FREE FROM ANY DELAMINATIONS, CRAZING, CRACKS, PITS, OR ANY OTHER SURFACE IRREGULARITIES.

3. DESIGN REQUIREMENTS:

- A. INTENDED USE: THE MATERIAL IS INTENDED FOR USE AS A WRITING SURFACE FOR APOLLO GROUND SUPPORT EQUIPMENT.

PROCURE ONLY FROM APPROVED SOURCE LISTED ON ND 1002034 FOR THIS DRAWING.

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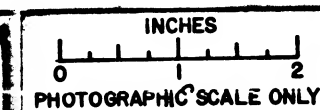
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	REPLACES REV. A WITH CHANGE PER MXC 191728 REVISED PER TDR 04645	4 NOV 63 11/19/63	J.J.J. PZ dt

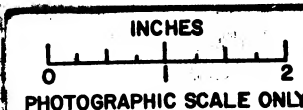
FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 03517 DATE 100263

ⓑ REPLACES REV A WITH CHANGE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN SUMMERVILLE DATE 6 SEP 63 CHECKED W. DIEHL 11 SEP 63 APPROVAL R. KLETT/JRS 11 SEP 63 APPROVAL <i>R. Klett</i> 11/18/63		LAMINATED THERMOSETTING DECORATIVE SHEET	
SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT: NONE		NASA DRAWING NO. 1016186	
FINAL FINISH: NONE		SIZE C	
APPLICATION		SCALE NONE	WT SHEET 1 OF 1





NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

GENERAL:

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.

EACH SHIPPING CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS, DATE OF MANUFACTURE.

ACCEPTANCE AND INSPECTION REQUIREMENTS:

THIS MATERIAL SHALL BE A NEOPRENE RUBBER TUBING WHOSE INSIDE DIAMETER WILL SHRINK TO A PREDETERMINED SIZE WHEN HEATED TO A TEMPERATURE IN EXCESS OF 175°C (347°F).

PHYSICAL PROPERTIES:

THE COLOR OF THE MATERIAL SHALL BE BLACK.

DIMENSIONS OF THE MATERIAL SHALL BE IN ACCORDANCE WITH TABLE I.

SPECIFIC GRAVITY OF THE MATERIAL SHALL BE NOT GREATER THAN 1.5 WHEN TESTED IN ACCORDANCE WITH ASTM-D-792.

THE SHORE A HARDNESS OF THE MATERIAL SHALL BE 80-90 DUROMETER WHEN TESTED IN ACCORDANCE WITH ASTM-D-676.

ELECTRICAL PROPERTIES:

THE DIELECTRIC STRENGTH OF THE MATERIAL SHALL BE NOT LESS THAN 200 VOLTS/MIL WHEN TESTED IN ACCORDANCE WITH ASTM-D-876.

THE VOLUME RESISTIVITY OF THE MATERIAL SHALL BE NOT LESS THAN 10^8 OHM-CM WHEN TESTED IN ACCORDANCE WITH ASTM-D-257.

DESIGN REQUIREMENTS:

INTENDED USE: THE MATERIAL IS INTENDED FOR USE AS CABLE INSULATION FOR APOLLO GROUND SUPPORT EQUIPMENT.

NOTES:

NOTE 1:

OTHER SPECIAL SIZES ARE AVAILABLE AND SHALL MEET, WITH THE EXCEPTION OF DIMENSIONS, ALL OF THE REQUIREMENTS OF THIS SPECIFICATION.

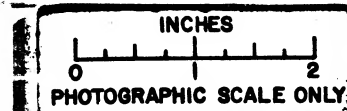
PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

Ⓐ REPLACED WITH CHANGE BY REV.B

MASTER

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± ± ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		NONE
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. CONTRACT 9-497 PAGE NO. 23-EXPT-63 DATE 23 SEP 63 DRAWN <i>Bender</i> CHECKED <i>C. Williams</i> APPROVAL <i>H.W. Finkbeiner</i> APPROVAL <i>L. Gedeon</i>		MANNED SPACECRAFT CENTER HOUSTON, TEXAS NEOPRENE INSULATION SLEEVING, HEAT SHRINKABLE SPECIFICATION CONTROL DRAWING	
NASA APPROVAL <i>W.D. Rhine</i> MIT APPROVAL <i>W.C. Gifford</i>		CODE IDENT NO. C SIZE 1016188 SCALE — WT —	NASA DRAWING NO. SHEET 1 OF 1



FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 03236 DATE 10/8/63

TABLE I

SIZE INCHES	INSIDE DIAMETER AND WALL THICKNESS OF TUBING (SEE NOTE 1)				
	EXPANDED - AS SUPPLIED		RECOVERED DIMENSIONS - AFTER HEATING		
	INSIDE DIAMETER (INCHES) MINIMUM	INSIDE DIAMETER (INCHES) MAXIMUM	WALL THICKNESS (INCHES)		
1/4	0.250	.143	0.025	0.045	0.035
3/8	.375	.214	.030	.050	.040
1/2	.500	.286	.033	.063	.048
5/8	.625	.357	.037	.067	.052
3/4	.750	.428	.042	.072	.057
7/8	.875	.500	.050	.080	.065
1	1.00	.570	.050	.090	.070
1-1/4	1.25	.714	.067	.107	.087
1-1/2	1.50	.857	.075	.115	.095
1-3/4	1.75	1.00	.087	.127	.107
2	2.00	1.14	.090	.130	.110
3	3.00	1.71	.105	.145	.125
4	4.00	2.28	.120	.160	.140

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OR ALL OF THE FOLLOWING: (1) THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA; (2) THE FACT THAT THE GOVERNMENT MAY HAVE PERMITTED, IN ANY MANNER, THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

GENERAL:

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.

EACH SHIPPING CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS, DATE OF MANUFACTURE.

ACCEPTANCE AND INSPECTION REQUIREMENTS:

THIS MATERIAL SHALL BE A NEOPRENE RUBBER TUBING WHOSE INSIDE DIAMETER WILL SHRINK TO A PREDETERMINED SIZE WHEN HEATED TO A TEMPERATURE IN EXCESS OF 175°C (347°F).

PHYSICAL PROPERTIES:

THE COLOR OF THE MATERIAL SHALL BE BLACK.

DIMENSIONS OF THE MATERIAL SHALL BE IN ACCORDANCE WITH TABLE 1.

SPECIFIC GRAVITY OF THE MATERIAL SHALL BE NOT GREATER THAN 1.5 WHEN TESTED IN ACCORDANCE WITH ASTM-D-792.

THE SHORE A HARDNESS OF THE MATERIAL SHALL BE 80-90 DUROMETER WHEN TESTED IN ACCORDANCE WITH ASTM-D-676.

ELECTRICAL PROPERTIES:

THE DIELECTRIC STRENGTH OF THE MATERIAL SHALL BE NOT LESS THAN 200 VOLTS/MIL WHEN TESTED IN ACCORDANCE WITH ASTM-D-876.

THE VOLUME RESISTIVITY OF THE MATERIAL SHALL BE NOT LESS THAN 10⁸ OHM-CM WHEN TESTED IN ACCORDANCE WITH ASTM-D-257.

DESIGN REQUIREMENTS:

INTENDED USE: THE MATERIAL IS INTENDED FOR USE AS CABLE INSULATION FOR APOLLO GROUND SUPPORT EQUIPMENT.

NOTES:

NOTE 1:

OTHER SPECIAL SIZES ARE AVAILABLE AND SHALL MEET, WITH THE EXCEPTION OF DIMENSIONS, ALL OF THE REQUIREMENTS OF THIS SPECIFICATION.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

8819101

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 03236 DATE 10/8/63

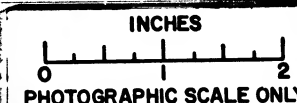
TABLE 1

INSIDE DIAMETER AND WALL THICKNESS OF TUBING (SEE NOTE 1)					
SIZE INCHES	EXPANDED - AS SUPPLIED		RECOVERED DIMENSIONS - AFTER HEATING		
	INSIDE DIAMETER (INCHES) MINIMUM	INSIDE DIAMETER (INCHES) MAXIMUM	WALL THICKNESS (INCHES)		
			MINIMUM	MAXIMUM	NOMINAL
1/4	0.250	.143	0.025	0.045	0.035
3/8	.375	.214	.030	.050	.040
1/2	.500	.286	.033	.063	.048
5/8	.625	.357	.037	.067	.052
3/4	.750	.428	.042	.072	.057
7/8	.875	.500	.050	.080	.065
1	1.00	.570	.050	.090	.070
1-1/4	1.25	.714	.067	.107	.087
1-1/2	1.50	.857	.075	.115	.095
1-3/4	1.75	1.00	.087	.127	.107
2	2.00	1.14	.090	.130	.110
3	3.00	1.71	.105	.145	.125
4	4.00	2.28	.120	.160	.140

MASTER

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
TOLERANCES ON	
FRACTIONS	DECIMALS ANGLES
±	± ±
DO NOT SCALE THIS DRAWING	
MATERIAL	
SEE REQUIREMENTS	
HEAT TREATMENT	
NONE	
FINAL FINISH	
NONE	
NEXT ASSY	USED ON
APPLICATION	

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. CONTRACT 9-497 Dwg. No. 23-SEPT-63 DATE DRAWN Bender CHECKED C. Williams 23 SEP 63 APPROVAL J. W. Eichenlaub 24 SEP 63 APPROVAL J. G. Eichenlaub 10/7/63	MANNED SPACECRAFT CENTER HOUSTON, TEXAS NEOPRENE INSULATION SLEEVING, HEAT SHRINKABLE SPECIFICATION CONTROL DRAWING		
NASA APPROVAL W. J. R. 10-1-63 MIT APPROVAL J. G. Eichenlaub 10/7/63	CODE IDENT NO.	SIZE	NASA DRAWING NO.
SCALE	WT	C	1016188
SHEET 1 OF 1			



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OF CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

GENERAL:

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.

EACH SPOOL AND SHIPPING CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS, DATE OF MANUFACTURE, ETC.

ACCEPTANCE AND INSPECTION REQUIREMENTS:

OUTER JACKET: BLACK, POLYVINYL CHLORIDE TEMP/LIMITS -40°C TO +80°C.

OUTSIDE DIAMETER: .285" NOMINAL

OUTER SHIELD: TINNED COPPER.

INNER JACKET: BLACK, POLYVINYL CHLORIDE TEMP/LIMITS -40°C TO +80°C

INNER JACKET: OUTSIDE DIAMETER .195" NOMINAL

INNER SHIELD: TINNED COPPER

DIELECTRIC: POLYETHYLENE OUTSIDE DIAMETER: .116 NOMINAL

CENTER COND: 19 STRANDS OF .007 TINNED COPPER

VELOCITY OF PROPAGATION: 65.9%

CAP. pF/ft. -29.5

MAX. OPERATING VOLTS RMS -1900

DESIGN REQUIREMENTS:

SHELF LIFE: NOT REQUIRED.

THIS CABLE IS INTENDED FOR USE ON APOLLO GSE.

PROCURE ONLY FROM APPROVED SOURCE LISTED ON ND 1002034 FOR THIS DRAWING.

0619101

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REPLACED WITH CHANGE BY REV. B PER CM-196486 REVISED PER TDR 08436	6-APR-64	J.B. EF

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 03736 DATE

10/8/63

REPLACED WITH CHANGE BY REV B

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>J. Wolak</i> 23 SEP 63 CHECKED <i>C. Williams</i> 23 SEP 63 APPROVAL <i>M. Charleston</i> 23 SEP 63 APPROVAL <i>L. Friedman</i> 7/7/63		TRIAXIAL - CABLE 50 OHM NOMINAL IMPEDANCE (RG-58A) SPECIFICATION CONTROL DRAWING	
NASA APPROVAL <i>W. J. Rhee</i> 10-8-63 MIT APPROVAL <i>W. R. Rhee</i> 10-8-63		CODE IDENT NO.	NASA DRAWING NO.
		C	1016190
SCALE		WT	SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY CALCULATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY INDICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL, OR PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

GENERAL:

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
EACH SPOOL AND SHIPPING CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS, DATE OF MANUFACTURE, ETC.

ACCEPTANCE AND INSPECTION REQUIREMENTS:

OUTER JACKET: BLACK, POLYVINYL CHLORIDE TEMP/LIMITS
-40°C TO +80°C.

OUTSIDE DIAMETER: .285" NOMINAL

OUTER SHIELD: TINNED COPPER.

INNER JACKET: BLACK, POLYVINYL CHLORIDE TEMP/LIMITS
-40°C TO +80°C

INNER JACKET: OUTSIDE DIAMETER .195" NOMINAL

INNER SHIELD: TINNED COPPER

DIELECTRIC: POLYETHYLENE OUTSIDE DIAMETER: .116 NOMINAL

CENTER COND: 19 STRANDS OF .007 TINNED COPPER

VELOCITY OF PROPAGATION: 65.9%

CAP. pF/ft. -29.5

MAX. OPERATING VOLTS RMS -1900

DESIGN REQUIREMENTS:

SHELF LIFE: NOT REQUIRED.

THIS CABLE IS INTENDED FOR USE ON APOLLO GSE.

0619101

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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FOR INFORMATION ONLY

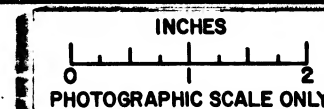
CLASS B RELEASE TDR No. 03736 DATE

10/8/63

PROCURE ONLY FROM APPROVED SOURCE LISTED ON ND 1002034 FOR THIS DRAWING.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ± DO NOT SCALE THIS DRAWING MATERIAL SEE REQUIREMENTS HEAT TREATMENT NONE FINAL FINISH NONE
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. NAS DWS NO. CONTRACT 9-497 DRAWN J. Wolaki 23 SEP 63 CHECKED C. Wilson 23 SEP 63 APPROVAL M. Charleston 23 SEP 63 APPROVAL L. Friedman 27 SEP 63		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
NASA APPROVAL W. J. Rhee 10-8-63 MIT APPROVAL W. K. Rhee 10-8-63		TRIAXIAL - CABLE 50 OHM NOMINAL IMPEDANCE (RG-58A) SPECIFICATION CONTROL DRAWING CODE IDENT NO. SIZE NASA DRAWING NO. C 1016190 SCALE WT SHEET 1 OF 1	



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFIRMING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY INVENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

1619101	REVISIONS			
	SYM	DESCRIPTION	DATE	APPROVAL
	A	REPLACED WITH CHANGE BY REV. B CM 195040 REVISED PER TDR 07102	FEB 64 3/2/64	B.W.J. CJP WLC

REQUIREMENTS:

1. GENERAL:
 - A. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
 - B. SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
 - C. EACH UNIT, TUBE OR CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS AND LOT NUMBER.
2. ACCEPTANCE AND INSPECTION REQUIREMENTS:
 - A. MATERIAL: RUBBER BASE COMPOUND SUITABLE FOR BONDING PARTS.
 - (1) TOTAL SOLIDS: 20% MINIMUM WHEN TESTED IN ACCORDANCE WITH MIL-A-5092.
 - (2) VISCOSITY: 10 TO 80 SECONDS WHEN TESTED IN ACCORDANCE WITH MIL-A-5092.
 - (3) PEEL STRENGTH: AS SPECIFIED IN TABLE I, WHEN PREPARED AND TESTED IN ACCORDANCE WITH MIL-C-4003.
 - (4) APPEARANCE: SHALL BE UNIFORM IN CONSISTENCY AND COLOR AND SHALL NOT EXHIBIT GELLING, HARDENING OR EXCESSIVE SEPARATION.
 - (5) COLOR: THE COLOR OF THE CURED ADHESIVE SHALL BE YELLOW.
3. DESIGN REQUIREMENTS:
 - A. APPLICATION: ND 1002179
 - B. INTENDED USE: BONDING SYNTHETIC RUBBER TO METAL SURFACES.

TABLE I

CURE PERIOD (HR.)	1	48
PEEL STRENGTH LB/INCH MINIMUM	2	13

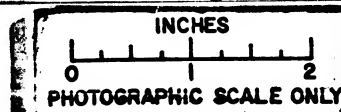
PROCURE ONLY FROM APPROVED SOURCE LISTED
IN ND 1002034 FOR THIS DRAWING.

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04436 DATE 11/5/63

Ⓐ REPLACED WITH CHANGE BY REV B

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. NAS CONTRACT 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>J. Parks</i> DATE 30 SEP 63 CHECKED <i>C. Prida</i> 2 OCT 63 APPROVAL <i>Steen</i> 2 OCT 63 APPROVAL <i>C. G. Dunham</i> 11/5/63		ADHESIVE, RUBBER BASE	
SEE REQUIREMENTS HEAT TREATMENT NONE FINAL FINISH NONE		SPECIFICATION CONTROL DRAWING CODE IDENT NO. C SIZE 1016191	
NASA APPROVAL <i>Blasman</i> MIT APPROVAL <i>W. H. Hays</i> 5/10/63		SCALE NONE WT SHEET 1 OF 1	



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFIRMING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
- SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
- EACH UNIT AND SHIPPING CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS, LOT NUMBER, DATE OF MANUFACTURE AND EXPIRATION DATE FOR MATERIAL IN UNOPENED CONTAINERS.

2. ACCEPTANCE AND INSPECTION REQUIREMENTS:

- MATERIAL : RUBBER BASE COMPOUND CAPABLE OF CURING WITHOUT ADDITION OF SEPARATE CURING AGENT.
 - TOTAL SOLIDS: 20% MINIMUM WHEN TESTED IN ACCORDANCE WITH MIL-A-5092.
 - VISCOSITY: 10 TO 80 SECONDS WHEN TESTED IN ACCORDANCE WITH MIL-A-5092.
 - COLOR: THE COLOR OF THE ADHESIVE SHALL BE YELLOW.
 - APPEARANCE: SHALL BE UNIFORM IN CONSISTENCY AND COLOR AND SHALL NOT EXHIBIT GELLING, HARDENING OR EXCESSIVE SEPARATION.

3. DESIGN REQUIREMENTS:

- CURED MATERIAL:
 - PEEL STRENGTH: AS SPECIFIED IN TABLE I WHEN PREPARED AND TESTED IN ACCORDANCE WITH MIL-C-4003.
- INTENDED USE: BONDING SYNTHETIC RUBBER TO METAL SURFACES.
- SHELF LIFE: THE MATERIALS SHALL HAVE FOUR MONTHS MINIMUM USABLE SHELF LIFE WHEN RECEIVED BY THE PURCHASER AND STORED AT A TEMPERATURE NOT TO EXCEED 77°F IN UNOPENED CONTAINERS.

TABLE I

CURE PERIOD (HR.)	1	48
PEEL STRENGTH LB/INCH MINIMUM	2	13

PROCURE ONLY FROM APPROVED SOURCES LISTED ON
ND 1002034 FOR THIS DRAWING.

1619101

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	REPLACES REV. A WITH CHANGE PER CM 195040 REVISED PER TDR 07104	17 FEB 63	R.V.I. C+P

FOR INFORMATION ONLY

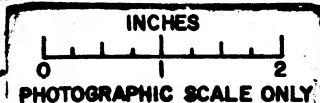
CLASS B RELEASE TDR No. 02236

DATE

4/5/63

REPLACES REV A WITH CHANGE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN J. PARKS DATE 30 SEP 63 CHECKED C. PIQJDA 2 OCT 63 APPROVAL R. KLETT 2 OCT 63 APPROVAL J. GEDMAN 24 SEP 63		ADHESIVE, RUBBER BASE	
SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		CODE IDENT NO.	NASA DRAWING NO.
NEXT ASSY		C	1016191
USED ON		SCALE NONE	WT
APPLICATION		SHEET 1 OF 1	



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPORTED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFERRING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREIN.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
- SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
- EACH UNIT, TUBE OR CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS AND LOT NUMBER.

2. ACCEPTANCE AND INSPECTION REQUIREMENTS:

A. MATERIAL: RUBBER BASE COMPOUND SUITABLE FOR BONDING PARTS.

- TOTAL SOLIDS: 20% MINIMUM WHEN TESTED IN ACCORDANCE WITH MIL-A-5092.
- VISCOSITY: 10 TO 80 SECONDS WHEN TESTED IN ACCORDANCE WITH MIL-A-5092.
- PEEL STRENGTH: AS SPECIFIED IN TABLE I, WHEN PREPARED AND TESTED IN ACCORDANCE WITH MIL-C-4003.
- APPEARANCE: SHALL BE UNIFORM IN CONSISTENCY AND COLOR AND SHALL NOT EXHIBIT GELLING, HARDENING OR EXCESSIVE SEPARATION.
- COLOR: THE COLOR OF THE CURED ADHESIVE SHALL BE YELLOW.

3. DESIGN REQUIREMENTS:

A. APPLICATION: ND 1002179

B. INTENDED USE: BONDING SYNTHETIC RUBBER TO METAL SURFACES.

TABLE I

CURE PERIOD (HR.)	1	48
PEEL STRENGTH LB/INCH MINIMUM	2	13

PROCURE ONLY FROM APPROVED SOURCE LISTED
IN ND 1002034 FOR THIS DRAWING.

1619101

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04436 DATE 11/5/63

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. CONTRACT 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <u>J. Parks</u> DATE <u>30 SEP 63</u> CHECKED <u>C. Pijda</u> <u>2 OCT 63</u> APPROVAL <u>[Signature]</u> <u>2 OCT 63</u> APPROVAL <u>[Signature]</u> <u>11/5/63</u>		ADHESIVE, RUBBER BASE	
SEE REQUIREMENTS HEAT TREATMENT NONE FINAL FINISH NONE		SPECIFICATION CONTROL DRAWING CODE IDENT NO. SIZE C 1016191 SCALE NONE WT SHEET 1 OF 1	
NEXT ASSY	USED ON	NASA APPROVAL <u>[Signature]</u> MIT APPROVAL <u>[Signature]</u> <u>5/16/63</u>	
APPLICATION		NASA DRAWING NO. 1016191	

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFERRING ANY RIGHT, OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

2619101

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REPLACED WITH CHANGE BY REV. B PER CM 194413 REVISED PER TDR 07383	20 JAN 64	RT JRC.

REQUIREMENTS:

1. GENERAL:
 - A. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
 - B. SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
 - C. EACH SHIPPING CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS, DATE OF MANUFACTURE, ETC.
2. ACCEPTANCE AND INSPECTION REQUIREMENTS:
 - A. MATERIAL: THE SEALER SHALL BE A LIQUID SUCH AS CYCLOHEXANONE. THE ADDITION OF A COLORING AGENT TO THE MATERIAL SHALL BE THE SUPPLIERS OPTION.
 - B. PROPERTIES:
 - (1) TENSILE STRENGTH: THE SEALER SHALL EXHIBIT A TENSILE STRENGTH OF NOT LESS THAN 50 POUNDS PER LINEAR INCH WHEN TESTED AS FOLLOWS:
 - a. A 1 INCH LONG SPECIMEN OF ZIPPER TUBING MEETING THE MINIMUM REQUIREMENTS OF ND 1002155 SHALL BE CLEANED TO ALLOW PROPER SEALING. A CLEANING AGENT WHICH WILL NOT DAMAGE THE TUBING IN ANY WAY, SUCH AS A DETERGENT OR DILUTE METHYL ALCOHOL, SHALL BE USED. AFTER CLEANING, THE SPECIMEN SHALL BE THOROUGHLY RINSED FREE OF ANY TRACES OF DETERGENT AND THOROUGHLY DRIED.
 - b. THE ZIPPER TUBING SHALL BE CLOSED AND THE SEALER FLOWED INTO THE ZIPPER TRACK IN SUCH A MANNER THAT THE SEALER IS PULLED INTO THE TRACK BY CAPILLARY ACTION.
 - c. THE SEALED ZIPPER TUBING SPECIMEN SHALL BE ALLOWED TO DRY FOR 24 HOURS MINIMUM, BEFORE THE CLOSURE IS STRESSED.
 - d. AFTER THE DRYING PERIOD, THE TUBING SHALL BE CUT ON THE SIDE OPPOSITE THE ZIPPER, LEAVING THE ZIPPER INTACT. THE CUT ENDS OF THE TUBING SHALL BE MOUNTED IN THE JAWS OF A SUITABLE TENSILE MACHINE. THE CROSSHEAD SPEED SHALL BE SET AT 10 INCHES PER MINUTE. THE MAXIMUM TENSION ATTAINED BEFORE FAILURE SHALL BE RECORDED AS POUNDS PER LINEAR INCH OF SEAL.
 - (2) WORKMANSHIP: THE SEALER SHALL BE PREPARED ACCORDING TO THE BEST COMMERCIAL PRACTICE AVAILABLE AND SHALL BE FREE FROM PARTICLES, DIRT AND OTHER CONTAMINATION.
3. DESIGN REQUIREMENTS:

THE MATERIAL SHALL BE FURNISHED IN THE AMOUNTS SPECIFIED IN THE PURCHASE ORDER.

PROCURE ONLY FROM APPROVED SOURCE LISTED IN ND 1002034 FOR THIS DRAWING.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON
		FRACTIONS DECIMALS ANGLES ± ± ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT NONE
NEXT ASSY	USED ON	FINAL FINISH NONE
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS DRAWN <i>Paul D. Tice</i> DATE <i>27 SEP 63</i> CHECKED <i>Ed Foster</i> <i>1 OCT 63</i> APPROVAL <i>John H. Thompson</i> <i>1 OCT 63</i> APPROVAL <i>John H. Thompson</i> <i>11/12/63</i>		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
NASA APPROVAL <i>W. J. ...</i> MIT APPROVAL <i>W. J. ...</i>		SEALER, ZIPPER TUBING SPECIFICATION CONTROL DRAWING CODE IDENT NO. SIZE C 1016192 SCALE NONE WT SHEET 1 OF 1	

FOR INFORMATION ONLY
CLASS B RELEASE TDR No. 04586 DATE 11/14/63

REPLACED WITH CHANGE BY REV B

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED, OR SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE USER OR ANY OTHER PERSON OR CORPORATION, OR CONFIRMING ANY RIGHT, OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

2619101

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
- SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
- EACH SHIPPING CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS, DATE OF MANUFACTURE, ETC.

2. ACCEPTANCE AND INSPECTION REQUIREMENTS:

- MATERIAL: THE SEALER SHALL BE A LIQUID SUCH AS CYCLOHEXANONE. THE ADDITION OF A COLORING AGENT TO THE MATERIAL SHALL BE THE SUPPLIER'S OPTION.

B. PROPERTIES:

- TENSILE STRENGTH: THE SEALER SHALL EXHIBIT A TENSILE STRENGTH OF NOT LESS THAN 50 POUNDS PER LINEAR INCH WHEN TESTED AS FOLLOWS:
 - A 1 INCH LONG SPECIMEN OF ZIPPER TUBING MEETING THE MINIMUM REQUIREMENTS OF ND 1002155 SHALL BE CLEANED TO ALLOW PROPER SEALING. A CLEANING AGENT WHICH WILL NOT DAMAGE THE TUBING IN ANY WAY, SUCH AS A DETERGENT OR DILUTE METHYL ALCOHOL, SHALL BE USED. AFTER CLEANING, THE SPECIMEN SHALL BE THOROUGHLY RINSED FREE OF ANY TRACES OF DETERGENT AND THOROUGHLY DRIED.
 - THE ZIPPER TUBING SHALL BE CLOSED AND THE SEALER FLOWED INTO THE ZIPPER TRACK IN SUCH A MANNER THAT THE SEALER IS PULLED INTO THE TRACK BY CAPILLARY ACTION.
 - THE SEALED ZIPPER TUBING SPECIMEN SHALL BE ALLOWED TO DRY FOR 24 HOURS MINIMUM, BEFORE THE CLOSURE IS STRESSED.
 - AFTER THE DRYING PERIOD, THE TUBING SHALL BE CUT ON THE SIDE OPPOSITE THE ZIPPER, LEAVING THE ZIPPER INTACT. THE CUT ENDS OF THE TUBING SHALL BE MOUNTED IN THE JAWS OF A SUITABLE TENSILE MACHINE. THE CROSSHEAD SPEED SHALL BE SET AT 10 INCHES PER MINUTE. THE MAXIMUM TENSION ATTAINED BEFORE FAILURE SHALL BE RECORDED AS POUNDS PER LINEAR INCH OF SEAL.
- WORKMANSHIP: THE SEALER SHALL BE PREPARED ACCORDING TO THE BEST COMMERCIAL PRACTICE AVAILABLE AND SHALL BE FREE FROM PARTICLES, DIRT AND OTHER CONTAMINATION.

3. DESIGN REQUIREMENTS:

- THE MATERIAL SHALL BE FURNISHED IN THE AMOUNTS SPECIFIED IN THE PURCHASE ORDER.

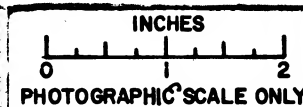
PROCURE ONLY FROM APPROVED SOURCE LISTED IN ND 1002034 FOR THIS DRAWING.

POSTER

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04586 DATE 11/17/63

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. DWS NO. <u>9-497</u>		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <u>Handwritten</u> DATE <u>27 3 63</u> CHECKED <u>Ed Foster</u> 1 OCT 63 APPROVAL <u>Handwritten</u> 1 OCT 63 APPROVAL <u>Handwritten</u> 11/12/63		SEALER, ZIPPER TUBING	
SEE REQUIREMENTS HEAT TREATMENT NONE FINAL FINISH NONE		SPECIFICATION CONTROL DRAWING CODE IDENT NO. <u>C</u> SIZE <u>1016192</u> NASA DRAWING NO. <u>1016192</u>	
NEXT ASSY USED ON APPLICATION		SCALE NONE WT SHEET 1 OF 1	



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

GENERAL:

- D INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
- SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
- EACH CONTAINER OF RESIN SHALL BE LABELED WITH THE MANUFACTURER'S NAME, MANUFACTURER'S DESIGNATION, MIXING RATIO, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS, AND DATE OF MANUFACTURE.

ACCEPTANCE AND INSPECTION:

MATERIAL DESCRIPTION: THIS MATERIAL SHALL BE SUPPLIED AS A CLEAR LIQUID. WHEN THIS MATERIAL IS COMBINED WITH THE MATERIAL SPECIFIED ON SCD 1016185, THE RESULTING POLYMER SHALL MEET ALL THE REQUIREMENTS OF SCD 1016185.

DESIGN REQUIREMENTS:

- C APPLICATION: THIS MATERIAL SHALL BE APPLIED AS OUTLINED IN ND
- SHELF LIFE: UNCURED PREPOLYMER SHALL NOT BE USED AFTER 6 MONTHS FROM THE DATE OF MANUFACTURE.
- INTENDED USE: THIS MATERIAL IS INTENDED AS PART OF A SYSTEM FOR USE IN APPLICATIONS WHERE A LOW DENSITY ENCAPSULANT IS REQUIRED WHICH WILL PROVIDE GOOD THERMAL INSULATION.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

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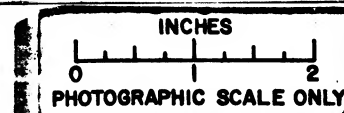
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REPLACED WITH CHANGE BY REV. B PER CM 194442 REVISED PER TDR 06.985	20 JAN 64	RT JAC
		3/2/64	WR

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05436 DATE 11/5/03

REPLACED WITH CHANGE BY REV B

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. DWS NO. CONTRACT 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>D. Matley</i> DATE 23 AUG 63 CHECKED <i>A. Udovich</i> 26 AUG 63 APPROVAL <i>J. Smith</i> 27 AUG 63 APPROVAL <i>L. Johnson</i> 11/5/63		POLYURETHANE, PREPOLYMER	
SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		NASA APPROVAL <i>J. Smith</i>	CODE IDENT NO. SIZE C
FINAL FINISH NONE		MIT APPROVAL <i>W. R. 5/1/63</i>	NASA DRAWING NO. 1016193
NEXT ASSY	USED ON	SCALE NONE WT	SHEET 1 OF 1
APPLICATION			



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

REQUIREMENTS:

GENERAL:

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.

SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.

EACH CONTAINER OF RESIN SHALL BE LABELED WITH THE MANUFACTURER'S NAME, MANUFACTURER'S DESIGNATION, MIXING RATIO, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS, AND DATE OF MANUFACTURE.

ACCEPTANCE AND INSPECTION:

MATERIAL DESCRIPTION: THIS MATERIAL SHALL BE SUPPLIED AS A CLEAR LIQUID. WHEN THIS MATERIAL IS COMBINED WITH THE MATERIAL SPECIFIED ON SCD 1016185, THE RESULTING POLYMER SHALL MEET ALL THE REQUIREMENTS OF SCD 1016185.

DESIGN REQUIREMENTS:

APPLICATION: THIS MATERIAL SHALL BE APPLIED AS OUTLINED IN ND

SHELF LIFE: UNCURED PREPOLYMER SHALL NOT BE USED AFTER 6 MONTHS FROM THE DATE OF MANUFACTURE.

INTENDED USE: THIS MATERIAL IS INTENDED AS PART OF A SYSTEM FOR USE IN APPLICATIONS WHERE A LOW DENSITY ENCAPSULANT IS REQUIRED WHICH WILL PROVIDE GOOD THERMAL INSULATION.

6619101

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 050436 DATE 11/5/63

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
NEXT ASSY	USED ON	FINAL FINISH
APPLICATION		NONE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. NAS DWS NO. CONTRACT 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <u>D. Mathey</u> DATE <u>23 AUG 63</u> CHECKED <u>A. Udovich</u> <u>26 AUG 63</u> APPROVAL <u>J. Smith</u> <u>27 Aug 63</u> APPROVAL <u>L. Johnson</u> <u>11/5/63</u>		POLYURETHANE, PREPOLYMER	
SPECIFICATION CONTROL DRAWING			
NASA APPROVAL <u>[Signature]</u>	CODE IDENT NO.	SIZE	NASA DRAWING NO.
MIT APPROVAL <u>[Signature]</u>		C	1016193
SCALE NONE		WT	SHEET 1 OF 1

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

GENERAL:

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
EACH CONTAINER AND EXTERIOR SHIPPING CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME, AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS AND DATE OF MANUFACTURE.

ACCEPTANCE AND INSPECTION REQUIREMENTS:

COLOR - THE MATERIAL SHALL BE A COLOR MATCH FOR "CASHMERE BLUE" DUPONT COLOR NO. 93-91407.
VISCOSITY - THE VISCOSITY SHALL BE 48 ± 5 SEC. WHEN DETERMINED IN ACCORDANCE WITH METHOD 4282 OF FED-STD-141.
SOLIDS CONTENT - THE SOLIDS CONTENT BY VOLUME SHALL BE NOT LESS THAN 30% WHEN TESTER PER FED-STD-141, METHOD 4041.
WEIGHT PER GALLON - THE WEIGHT PER GALLON SHALL BE BETWEEN 8 AND 10 POUNDS WHEN TESTED IN ACCORDANCE WITH METHOD 4184 OF FED-STD-141.
REDUCIBILITY - THE ENAMEL SHALL BE COMPATIBLE WHEN THINNED BY THE ADDITION OF 25% BY VOLUME TOLUOL OR ZYLOL AND EXAMINED PER METHOD 4203 OF FED-STD-141.

DESIGN REQUIREMENTS:

APPLICATION - THE MATERIAL SHALL BE A SYNTHETIC ALKYD EXTERIOR GRADE ENAMEL SUITABLE FOR USE ON METAL SURFACES WHEN APPLIED PER MIL-F-14072, P-513.
SHELF LIFE - THE SHELF LIFE AT ROOM AMBIENT, 75°F, SHALL BE ONE YEAR MINIMUM.
INTENDED USE - THIS MATERIAL IS INTENDED FOR USE IN FINISHING APOLLO GROUND SUPPORT EQUIPMENT.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

1016194

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REPLACED WITH CHANGE BY REV. B PER CM-196076 REVISED PER TDR 08005	24-MAR-64	J.B. EF

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 1016194 DATE 11/5/83

REPLACED WITH CHANGE BY REV B

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS DWS NO. CONTRACT 6-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <u>D. M. MANNING</u> DATE <u>27 AUG 63</u> CHECKED <u>L. L. STIGNEY</u> 27 AUG 63 APPROVAL <u>L. L. STIGNEY</u> 27 AUG 63 APPROVAL <u>J. J. GEDMAN</u> 11/5/63		CASHMERE BLUE ENAMEL	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES \pm \pm \pm DO NOT SCALE THIS DRAWING MATERIAL SEE REQUIREMENTS HEAT TREATMENT NONE FINAL FINISH NONE		SPECIFICATION CONTROL DRAWING CODE IDENT NO. SIZE C 1016194 SCALE NONE WT SHEET 1 OF 1	
NEXT ASSY	USED ON	APPLICATION	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPORTED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
- EACH SHIPPING CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS, LOT NUMBER, DATE OF MANUFACTURE AND EXPIRATION DATE FOR MATERIAL WHEN STORED IN UNOPENED CONTAINERS.

2. ACCEPTANCE AND INSPECTION:

- MATERIAL:** THE MATERIAL SHALL BE AN AIR DRYING SYNTHETIC ALKYD EXTERIOR GRADE ENAMEL.
- COLOR:** THE ENAMEL SHALL BE A COLOR MATCH FOR "CASHMERE BLUE" DUPONT COLOR NO. 93-91407.
- PHYSICAL PROPERTIES:**
 - PACKAGE VISCOSITY:** THE VISCOSITY SHALL BE 48 ± 5 SEC. WHEN DETERMINED IN ACCORDANCE WITH METHOD 4282 OF FED-STD-141.
 - SOLIDS CONTENT:** THE SOLIDS CONTENT BY VOLUME SHALL BE NOT LESS THAN 30% WHEN TESTED PER METHOD 4041 OF FED-STD-141.
 - WEIGHT PER GALLON:** THE WEIGHT PER GALLON SHALL BE 8 TO 10 LBS. WHEN TESTED PER METHOD 4184 OF FED-STD-141.
 - REDUCIBILITY:** THE ENAMEL SHALL BE COMPATIBLE WHEN THINNED BY THE ADDITION OF 25% BY VOLUME TOLUOL OR XYLOL AND EXAMINED PER METHOD 4203 OF FED-STD-141.

3. DESIGN REQUIREMENTS:

- SHELF LIFE:** THE ENAMEL SHALL HAVE NOT LESS THAN ONE YEAR USABLE SHELF LIFE REMAINING WHEN RECEIVED BY THE PURCHASER AND STORED BELOW 80°F IN UNOPENED CONTAINERS.
- FINISH RESISTANCE:** THE ENAMEL SHALL MEET THE FINISH RESISTANCE REQUIREMENTS OF MIL-F-14072 WHEN APPLIED IN ACCORDANCE WITH P-513.
- INTENDED USE:** THIS MATERIAL IS INTENDED FOR USE IN FINISHING GROUND SUPPORT EQUIPMENT.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

B 1016194

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	REPLACES REV. A WITH CHANGE PER CM-196076 REVISED PER TDR 08005	24-MAR-64	J.B. EF

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 02436 DATE 11/5/63

(B) REPLACES REV A WITH CHANGE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN D. MATTEY 28-AUG-63 CHECKED MANNING 27-AUG-63 APPROVAL L.L. STIGNEY 27-AUG-63 APPROVAL L. Goodman 7/28/64		CASHMERE BLUE ENAMEL	
DO NOT SCALE THIS DRAWING MATERIAL SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		CODE IDENT NO.	NASA DRAWING NO.
FINAL FINISH NONE		C	1016194
MIT APPROVAL W. K. 28 Aug 64		SCALE NONE	WT
APPLICATION		SHEET 1 OF 1	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY AND NO OBLIGATION WHATSOEVER. ADD THE FACT THAT - THE DRAWING, SPECIFICATION OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFIRMING ANY RIGHTS OF PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

REQUIREMENTS:

GENERAL:

- INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
- SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
- EACH CONTAINER AND EXTERIOR SHIPPING CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME, AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS AND DATE OF MANUFACTURE.

ACCEPTANCE AND INSPECTION REQUIREMENTS:

- COLOR - THE MATERIAL SHALL BE A COLOR MATCH FOR "CASHMERE BLUE" DUPONT COLOR NO. 93-91407.
- VISCOSITY - THE VISCOSITY SHALL BE 48 ± 5 SEC. WHEN DETERMINED IN ACCORDANCE WITH METHOD 4282 OF FED-STD-141.
- SOLIDS CONTENT - THE SOLIDS CONTENT BY VOLUME SHALL BE NOT LESS THAN 30% WHEN TESTER PER FED-STD-141, METHOD 4041.
- WEIGHT PER GALLON - THE WEIGHT PER GALLON SHALL BE BETWEEN 8 AND 10 POUNDS WHEN TESTED IN ACCORDANCE WITH METHOD 4184 OF FED-STD-141.
- REDUCIBILITY - THE ENAMEL SHALL BE COMPATIBLE WHEN THINNED BY THE ADDITION OF 25% BY VOLUME TOLUOL OR ZYLOL AND EXAMINED PER METHOD 4203 OF FED-STD-141.

DESIGN REQUIREMENTS:

- APPLICATION - THE MATERIAL SHALL BE A SYNTHETIC ALKYD EXTERIOR GRADE ENAMEL SUITABLE FOR USE ON METAL SURFACES WHEN APPLIED PER MIL-F-14072, P-513.
- SHELF LIFE - THE SHELF LIFE AT ROOM AMBIENT, 75°F, SHALL BE ONE YEAR MINIMUM.
- INTENDED USE - THIS MATERIAL IS INTENDED FOR USE IN FINISHING APOLLO GROUND SUPPORT EQUIPMENT.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

1016194

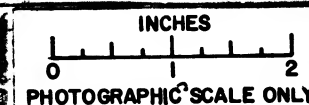
REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 146136 DATE 11/1/63

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS DWS. NO. CONTRACT 9-807		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <u>D. M. M. M.</u> DATE <u>26 AUG 63</u> CHECKED <u>M. M. M. M.</u> DATE <u>27 AUG 63</u>		CASHMERE BLUE ENAMEL	
DO NOT SCALE THIS DRAWING		SPECIFICATION CONTROL DRAWING	
MATERIAL SEE REQUIREMENTS		NASA DRAWING NO. 1016194	
HEAT TREATMENT NONE		CODE IDENT NO.	SIZE C
FINAL FINISH NONE		SCALE NONE	WT SHEET 1 OF 1
MIT APPROVAL <u>[Signature]</u> 5/15/63			



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
- SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
- EACH SPOOL, REEL OR CONTAINER AND EXTERIOR SHIPPING CONTAINER SHALL BE PERMANENTLY AND LEGIBLY IDENTIFIED WITH A TAG OR LABEL SHOWING THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, EXPANDED AND RECOVERED INSIDE DIAMETERS, LENGTH, QUANTITY AND DATE OF MANUFACTURE.

2. ACCEPTANCE AND INSPECTION REQUIREMENTS:

- MATERIAL:** THE MATERIAL SHALL BE FLEXIBLE, ELECTRICAL INSULATING EXTRUDED SHRINKFIT TUBING CONFORMING TO THE REQUIREMENTS OF ND 1002207 TYPE IV
- SIZE:** THE MATERIAL SHALL BE FURNISHED IN THE FOLLOWING SIZES:

DESIGNATION	I.D. (INCHES)
1016197-001	3/64
-002	1/16
-003	3/32
-004	1/8
-005	3/16
-006	1/4
-007	3/8
-008	1/2
-009	3/4
-010	1
-011	1-1/2
-012	3

- COLOR:** THE TUBING SHALL BE BLACK UNLESS OTHERWISE SPECIFIED. OTHER COLORS, CONFORMING TO MIL-STD-104 SHALL BE FURNISHED WHEN SPECIFIED IN THE ORDER OR CONTRACT.

3. DESIGN REQUIREMENTS:

- INTENDED USE:** THE TUBING IS INTENDED FOR USE AS A WIRE HARNESS JACKET TO PROVIDE A FLEXIBLE INSULATING COVERING.

PROCURE ONLY FROM APPROVED SOURCE LISTED IN ND 1002034 FOR THIS DRAWING.

MASTER

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REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04436 DATE 11/1/63

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS 02139-4977		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <u>R. J. J. J.</u> DATE <u>3 OCT 63</u> CHECKED <u>[Signature]</u> <u>7 OCT 63</u> APPROVAL <u>[Signature]</u> <u>7 OCT 63</u> APPROVAL <u>[Signature]</u> <u>11/1/63</u>		TUBING, MODIFIED POLYVINYL CHLORIDE, SHRINKFIT, FLEXIBLE SPECIFICATION CONTROL DRAWING	
NASA APPROVAL <u>[Signature]</u> MIT APPROVAL <u>[Signature]</u>		CODE IDENT NO. SIZE C	NASA DRAWING NO. 1016197
SCALE NONE		WT	SHEET 1 OF 1

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
- EACH SHIPPING AND UNIT CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER, AND REVISION LETTER, NET CONTENTS, LOT NUMBER, DATE OF MANUFACTURE AND EXPIRATION DATE FOR UNOPENED CONTAINERS.

2. INSPECTION AND ACCEPTANCE:

- MATERIAL: PHTHALIC ANHYDRIDE GLYCEROL RESIN OF A CONSISTENCY SUITABLE FOR BRUSH APPLICATION.
- PROPERTIES: WHEN TESTED AS SPECIFIED, THE MATERIAL SHALL COMPLY WITH THE REQUIREMENTS LISTED IN TABLE I.

3. DESIGN REQUIREMENTS:

- SHELF LIFE: WHEN STORED AT ROOM TEMPERATURE IN SEALED CONTAINERS, THE MATERIAL SHALL HAVE A MINIMUM OF 12 MONTHS USABLE SHELF LIFE WHEN RECEIVED.
- INTENDED USE: 1016198-1 AND 1016198-2 ARE INTENDED FOR USE AS AN IDENTIFICATION COLOR CODING MATERIAL. 1016198-1 IS ALSO INTENDED FOR USE AS TACKING OR COATING OVER SCREW HEADS TO HOLD THEM FIRMLY IN PLACE.

TABLE I

PROPERTY	TEST METHOD	REQUIREMENT	
		1016198-1	1016198-2
COLOR		BLUE	BRIGHT RED
MUNSELL NOTATION	ASTM-D-1535	--	8R 3.62/15
SOLIDS (PERCENT)	ASTM-D-1644 (1)	40 ± 1	--
VISCOSITY (CENTIPOISE)	ASTM-D-1545 (2)	100 - 400	300 - 400
WEIGHT (LBS/GAL)	FED TEST METHOD STD 141 METHOD 4184	--	7.56 - 7.94
SOLVENT SYSTEM		AROMATIC AND ALIPHATIC HYDROCARBONS	MIXED HYDROCARBONS

(1) METHOD B, MODIFIED AS FOLLOWS:

- DETERMINATION SHALL CONSIST OF TWO SAMPLES 2.4 - 2.6 GRAMS EACH WEIGHED TO THE NEAREST 0.001 GRAM.
- HEATING SCHEDULE SHALL BE $145 \pm 2^{\circ}\text{C}$ ($293 \pm 4^{\circ}\text{F}$) IN A VENTILATED OVEN FOR 45 MINUTES.
- DETERMINATION IS NOT VALID UNLESS RESULTS OF THE TWO SAMPLES ARE WITHIN 0.3%.

(2) TEST METHOD WILL DETERMINE RESULTS IN CENTISTROKES. CONVERT REPORTED VISCOSITY TO CENTIPOISE UNITS BY DETERMINING SPECIFIC GRAVITY OF THE MATERIAL PER ASTM-D-1963 AND CALCULATING ABSOLUTE VISCOSITY WITH THE FOLLOWING EQUATION:

CENTIPOISES = CENTISTROKES X SPECIFIC GRAVITY.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON
ND 1002034 FOR THIS DRAWING.

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REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 02323 DATE

3/31/64

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Bill Johnson</i> DATE <i>3 MAR 64</i> CHECKED <i>El Foster</i> APPROVAL <i>Bill Johnson</i> APPROVAL <i>Bill Johnson</i>		PAINT, INSULATING, SYNTHETIC RESIN BASE	
SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		NASA APPROVAL <i>Bill Johnson</i>	CODE IDENT NO. SIZE C
FINAL FINISH NONE		MIT APPROVAL <i>Bill Johnson</i>	NASA DRAWING NO. 1016198
APPLICATION		SCALE NONE WT	SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFIRMING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

GENERAL:

- D INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
- SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
- EACH SHIPPING CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NET CONTENTS AND DATE OF MANUFACTURE. EACH SHIPMENT SHALL BE IDENTIFIED WITH THE APPLICABLE NASA DRAWING NUMBER AND REVISION LETTER.

ACCEPTANCE AND INSPECTION REQUIREMENTS:

MATERIAL: THIS MATERIAL SHALL BE A POLYAMIDE RESIN WHICH IS SUITABLE FOR USE AS A CURING AGENT FOR EPOXY RESINS.

PROPERTIES:

- C CURING: WHEN MIXED WITH THE MATERIAL OUTLINED ON SCD 1016199 IN RATIOS OF 60 TO 40 AND 40 TO 60, THE MATERIAL SHALL DEMONSTRATE A COMPLETE CURE AS EVIDENCED BY TACK FREE SURFACES. MATERIAL SHALL BE CURED AT 75 \pm 5 $^{\circ}$ FOR A PERIOD OF 16 \pm 1 HOURS.
- VISCOSITY: THE VISCOSITY AT 75 $^{\circ}$ \pm 1 $^{\circ}$ C SHALL BE 2.0 TO 6.0 POISES WHEN TESTED WITH A BROOKFIELD VISCOMETER OR EQUIVALENT.
- COLOR: THE COLOR OF THE RESIN SHALL BE A MAXIMUM OF 3 WHEN TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM-D-1500.
- ASH CONTENT: WHEN A 1 GRAM \pm .001 GRAM SAMPLE OF MATERIAL IS IGNITED AT A TEMPERATURE OF APPROXIMATELY 1500 $^{\circ}$ F, THE MAXIMUM ASH CONTENT SHALL BE .05%.
- B SPECIFIC GRAVITY: SPECIFIC GRAVITY SHALL BE .97 \pm .02 WHEN TESTED AS OUTLINED IN ASTM-D-1298 USING THE PROCEDURE FOR NONVOLATILE SAMPLES. DETERMINATION SHALL BE MADE AT 60 $^{\circ}$ \pm .25 $^{\circ}$ F.

DESIGN REQUIREMENTS:

- A APPLICATION: THIS MATERIAL IS INTENDED FOR USE IN THE PROCESS DEFINED IN ND
- SHELF LIFE: THIS MATERIAL SHALL BE USED WITHIN ONE YEAR FROM THE DATE OF MANUFACTURE.
- INTENDED USE: THIS MATERIAL IS INTENDED FOR USE AS A CURING AGENT FOR EPOXY RESINS WHERE FLEXIBILITY IS DESIRED IN CURED ADHESIVE SYSTEMS.

1029101

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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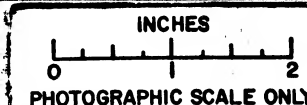
FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 03341 DATE

9/20/63

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS.		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN BY <i>L. J. ...</i> DATE <i>10 SEP 63</i>		CURING AGENT, POLYAMIDE	
CHECKED BY <i>L. J. ...</i> DATE <i>10 SEP 63</i>		SPECIFICATION CONTROL DRAWING	
APPROVAL <i>J. ...</i> DATE <i>16 SEP 63</i>		CODE IDENT NO.	NASA DRAWING NO.
NASA APPROVAL <i>L. J. ...</i> DATE <i>9/13/63</i>		SIZE	1016201
MIT APPROVAL <i>L. J. ...</i> DATE <i>9/24/63</i>		SCALE	SHEET 1 OF 1

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
\pm \pm \pm
DO NOT SCALE THIS DRAWING
MATERIAL
SEE REQUIREMENTS
HEAT TREATMENT
NONE
FINAL FINISH
NONE
NEXT ASSY
USED ON
APPLICATION



REQUIREMENTS:

GENERAL:

INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED
BY MIL-B-70327.

SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.

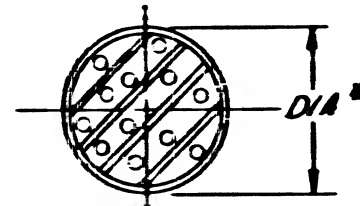
EACH LENGTH OR COIL SHALL BE IDENTIFIED WITH A TAG, PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS AND DATE OF MANUFACTURE.

ACCEPTANCE AND INSPECTION REQUIREMENTS:

**MATERIAL: THE MATERIAL SHALL MEET THE REQUIREMENTS OF
ND 1002179. WIRE MESH 0.0045 DIAMETER MONEL PER QQ-N-281,
CLASS A.**

CORE: NEOPRENE SPONGE PER ASTM-D-1056, GRADE SCE-42.

CONSTRUCTION: A SINGLE LAYER OF MONEL WIRE MESH SHALL BE KNOT
OVER THE SPONGE RUBBER CORE.



		DIAMETER*		
1016202	- 001	.156	+	.047 -0
	- 002	.187	+	.047 -0
	- 003	.218	+	.047 -0
	- 004	.250	+	.047 -0

***MEASURED UNDER 4 OZ. LOAD ON 3/4" ANVILS.**

DESIGN REQUIREMENTS:

INTENDED USE: RADIO FREQUENCY INTERFERENCE CONTROL.

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 0357 DATE 10/16/63

PROCURE ONLY FROM APPROVED SOURCE LISTED IN
ND 1002034 FOR THIS DRAWING.

		QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION		PIN NO.
		LIST OF MATERIALS				
		MIT INSTRUMENTATION LAB Cambridge, Mass. <i>AS</i> DATE <i>10/15/63</i> DOWNEY <i>9-20-67</i>		MANNED SPACECRAFT CENTER HOUSTON, TEXAS		
		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ± DO NOT SCALE THIS DRAWING MATERIAL SEE REQUIREMENTS		GASKET, RADIO FREQUENCY SPECIFICATION CONTROL DRAWING		
		HEAT TREATMENT NONE		NASA APPROVAL <i>[Signature]</i> CODE IDENT NO. SIZE NASA DRAWING NO. C 1016202		
NEXT ASSY	USED ON	FINAL FINISH NONE		MIT APPROVAL <i>[Signature]</i> SCALE NONE WT SHEET 1 OF 1		
APPLICATION						

INCHES

0 1 2

PHOTOGRAPHIC SCALE ONLY

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFERRING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

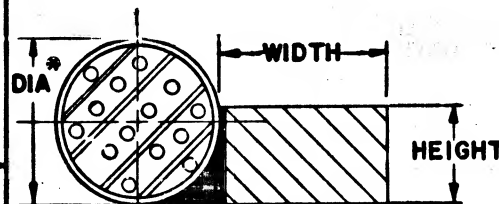
REQUIREMENTS:

GENERAL:

- D INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
- SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
- EACH LENGTH OR COIL SHALL BE IDENTIFIED WITH A TAG PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS AND DATE OF MANUFACTURE.

ACCEPTANCE AND INSPECTION REQUIREMENTS:

- MATERIAL: THE MATERIAL SHALL MEET THE REQUIREMENTS OF ND 1002179.
- WIRE MESH: 0.0045 DIA. MONEL PER QQ-N-281, CLASS A.
- CORE: NEOPRENE SPONGE PER ASTM-D-1056, GRADE SCE-42.
- FLANGE: NEOPRENE RUBBER (SOLID) PER MIL-R-6855, CLASS II, GRADE 40, GRAY.
- ADHESIVE: 3M-EC-1362.
- C CONSTRUCTION: A SINGLE LAYER OF MONEL WIRE MESH SHALL BE KNIT OVER THE SPONGE RUBBER CORE AND THE CORED DIAMETER SHALL BE BONDED TO THE SOLID RUBBER FLANGE.



FILL VOID WITH ADHESIVE 3M-EC-1362

* MEASURED UNDER 4 OZ. LOAD ON 3/4 INCH ANVILS.

DESIGN REQUIREMENTS:

INTENDED USE: RADIO FREQUENCY INTERFERENCE CONTROL.

NASA PART NUMBER	DIA	HGT	W
1016203-001	.187 ^{+.047} _{-.000}	.125	.312
1016203-002	.250 ^{+.047} _{-.000}	.156	.250

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND TOLERANCES $\pm .015$

PROCURE ONLY FROM APPROVED SOURCE LISTED IN ND 1002034 FOR THIS DRAWING.

MASTER

1016203

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 03517 DATE 100863

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIN NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS DWS. NO. CONTRACT 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>[Signature]</i> DATE 5/16/63 CHECKED <i>[Signature]</i> 11/26/63 APPROVAL <i>[Signature]</i> 12/10/63 APPROVAL <i>[Signature]</i> 9/27/63		GASKET, RADIO FREQUENCY SPECIFICATION CONTROL DRAWING	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES \pm \pm \pm		NASA APPROVAL <i>[Signature]</i> CODE IDENT NO. SIZE C NASA DRAWING NO. 1016203	
DO NOT SCALE THIS DRAWING MATERIAL SEE REQUIREMENTS		MIT APPROVAL <i>[Signature]</i> 10/16/63 SCALE WT SHEET 1 OF 1	
HEAT TREATMENT NONE	FINAL FINISH NONE		
NEXT ASSY	USED ON		
APPLICATION			



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREIN.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
- SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
- EACH UNIT AND SHIPPING CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS, DATE OF MANUFACTURE, ETC.

2. ACCEPTANCE AND INSPECTION REQUIREMENTS:

- THIS MATERIAL SHALL BE A SILICONE FLUID WHICH WILL CURE TO AN ADHERENT FILM UPON EXPOSURE TO HUMID AIR.
- THE COLOR OF THE MATERIAL SHALL BE LIGHT STRAW.

3. DESIGN REQUIREMENTS:

- APPLICATION: THE MATERIAL SHALL BE APPLIED AS SPECIFIED IN ND 1002147.
- INTENDED USE: THE MATERIAL IS TO BE APPLIED TO ALL SURFACES PRIOR TO THE APPLICATION OF SILICONE RUBBER ADHESIVES OR POTTING COMPOUNDS. THE MATERIAL IS NOT REQUIRED ON SILICONE RUBBER SURFACES.

PROCURE ONLY FROM APPROVED SOURCE LISTED IN ND 1002034 FOR THIS DRAWING.

1016204

REVISIONS

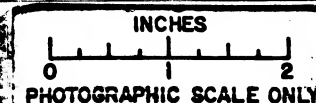
SYM	DESCRIPTION	DATE	APPROVAL
A	REPLACED WITH CHANGE BY REV. 1 CM 194769 REVISED PER TDR 06832	10 FEB 64	R.W. J. MEM

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 06637 DATE 19NOV63

Ⓐ REPLACED WITH CHANGE BY REV B

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS DWS NO. CONTRACT NAS8-487		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Splane</i> DATE 19 OCT 63 CHECKED <i>Ed Foster</i> 31 OCT 63 APPROVAL <i>H. Engstrom</i> 31 OCT 63 APPROVAL <i>L. J. Hamaker</i> 11/18/63		PRIMER FOR SILICONE RUBBER ADHESIVES AND POTTING COMPOUND SPECIFICATION CONTROL DRAWING	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ± DO NOT SCALE THIS DRAWING MATERIAL SEE REQUIREMENTS HEAT TREATMENT NONE FINAL FINISH NONE		CODE IDENT NO. SIZE C	NASA DRAWING NO. 1016204
NEXT ASSY	USED ON	SCALE NONE WT	SHEET 1 OF 1
APPLICATION			



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER. IT IS THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREIN.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
- SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
- EACH UNIT AND SHIPPING CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS, DATE OF MANUFACTURE, ETC.

2. ACCEPTANCE AND INSPECTION REQUIREMENTS:

- THIS MATERIAL SHALL BE A SILICONE FLUID WHICH WILL CURE TO AN ADHERENT FILM UPON EXPOSURE TO HUMID AIR.
- THE COLOR OF THE MATERIAL SHALL BE LIGHT STRAW.

3. DESIGN REQUIREMENTS:

- APPLICATION: THE MATERIAL SHALL BE APPLIED AS SPECIFIED IN ND 1002147.
- INTENDED USE: THE MATERIAL IS TO BE APPLIED TO ALL SURFACES PRIOR TO THE APPLICATION OF SILICONE RUBBER ADHESIVES OR POTTING COMPOUNDS. THE MATERIAL IS NOT REQUIRED ON SILICONE RUBBER SURFACES.

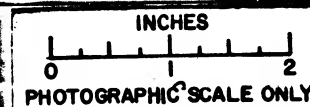
FOR INFORMATION ONLY

CLASS B RELEASE TDR No. _____ DATE

PROCURE ONLY FROM APPROVED SOURCE LISTED IN ND 1002034 FOR THIS DRAWING.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		
		TOLERANCES ON		
		FRACTIONS	DECIMALS	ANGLES
		±	±	±
		DO NOT SCALE THIS DRAWING		
		MATERIAL		
		SEE REQUIREMENTS		
		HEAT TREATMENT		
		NONE		
		FINAL FINISH		
		NONE		
NEXT ASSY	USED ON			
APPLICATION				

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS DWS NO. _____ CONTRACT 497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Splane</i> DATE 29 OCT 63		PRIMER FOR SILICONE RUBBER ADHESIVES AND POTTING COMPOUND	
CHECKED <i>E. Foster</i> 31 OCT 63		SPECIFICATION CONTROL DRAWING	
APPROVAL <i>E. Erickson</i> 31 OCT 63		NASA DRAWING NO. 1016204	
APPROVAL <i>L. J. Herman</i> 11/15/63		CODE IDENT NO.	SIZE
NASA APPROVAL <i>Whitaker</i> 11/15/63			C
MIT APPROVAL <i>W. H. H. H.</i> 11/15/63		SCALE NONE	WT
		SHEET 1 OF 1	



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:
 - A. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
 - B. SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
 - C. EACH UNIT AND SHIPPING CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS, DATE OF MANUFACTURE, ETC.
2. ACCEPTANCE AND INSPECTION REQUIREMENTS:
 - A. THIS MATERIAL SHALL BE A SILICONE ELASTOMER COMPOUND CAPABLE OF BEING CURED WITHOUT THE APPLICATION OF HEAT OR PRESSURE. THE CURING AGENT SHALL BE SUPPLIED WITH THE COMPOUND IN A SEPARATE CONTAINER.
 - B. PROPERTIES BEFORE CURING:
 - (1) THE COLOR OF THE COMPOUND SHALL BE WHITE.
 - (2) THE VISCOSITY OF THE COMPOUND SHALL BE NOT GREATER THAN 70,000 CPS WHEN TESTED WITH A BROOKFIELD MODEL RVF VISCOMETER OR EQUIVALENT, USING A NUMBER 4 SPINDLE ROTATED AT 2 RPM.
 - C. PROPERTIES AFTER CURING:
 - (1) THE SHORE A HARDNESS OF THE MATERIAL SHALL BE NOT LESS THAN 25 DUROMETER WHEN TESTED IN ACCORDANCE WITH ASTM-D-676.
 - (2) DIELECTRIC STRENGTH OF THE MATERIAL SHALL BE NOT LESS THAN 300 VOLTS PER MIL WHEN TESTED IN ACCORDANCE WITH ASTM-D-149.
3. DESIGN REQUIREMENTS:
 - A. THE MATERIAL SHALL BE PROCESSED IN ACCORDANCE WITH ND 1002009.
 - B. THE SHELF LIFE OF THE MATERIAL SHALL BE NOT LESS THAN 4 MONTHS FROM THE DATE OF MANUFACTURE.
 - C. THE MATERIAL IS INTENDED FOR POTTING MODULES OR ASSEMBLIES FOR APOLLO GROUND SUPPORT EQUIPMENT.

PROCURE ONLY FROM APPROVED SOURCE LISTED IN ND 1002034 FOR THIS DRAWING.

MASTER

1016207

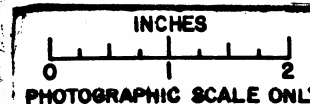
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REPLACED WITH CHANGE BY REV. PER CM 194901 REVISED PER TDR 02078	7 FEB 64	R.W. T. MEM

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05212 DATE 12/12/63

REPLACED WITH CHANGE BY REV B

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIG NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS DWS NO. <u>Contract NAS 9-497</u>		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <u>J.P. Sullivan</u> DATE <u>21 Nov 63</u> CHECKED <u>Ed Foster</u> <u>25 Nov 63</u> APPROVAL <u>H.W. Epichman</u> <u>25 Nov 63</u> APPROVAL <u>L. J. Gorman</u> <u>12/14/63</u>		SILICONE RUBBER, ROOM TEMPERATURE VULCANIZING SPECIFICATION CONTROL DRAWING	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ± DO NOT SCALE THIS DRAWING MATERIAL SEE REQUIREMENTS HEAT TREATMENT NONE FINAL FINISH NONE		CODE IDENT NO. <u>C</u> SCALE <u>NONE</u> WT	NASA DRAWING NO. 1016207 SHEET 1 OF 1
NEXT ASSY	USED ON	APPLICATION	



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFIRMING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

B 1016207

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	REPLACES REV. A WITH CHANGE PER C M 104901	7 FEB 64	R.M.T. MEM
	REVISED PER TDR 07098	3/24/64	W.K.

REQUIREMENTS:

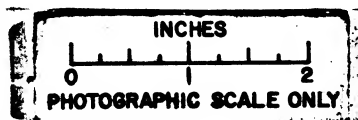
1. GENERAL:
 - A. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
 - B. SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
 - C. EACH UNIT AND SHIPPING CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS, LOT NUMBER, DATE OF MANUFACTURE, AND EXPIRATION DATE FOR THE MATERIAL WHEN STORED IN UNOPENED CONTAINERS.
2. ACCEPTANCE AND INSPECTION:
 - A. THIS MATERIAL SHALL BE SILICONE ELASTOMER COMPOUND CAPABLE OF BEING CURED WITHOUT THE APPLICATION OF HEAT OR PRESSURE. THE CURING AGENT SHALL BE SUPPLIED WITH THE COMPOUND IN A SEPARATE CONTAINER.
 - B. PROPERTIES:
 - (1) THE COLOR OF THE COMPOUND SHALL BE WHITE.
 - (2) THE VISCOSITY OF THE UNCURED COMPOUND SHALL BE NOT GREATER THAN 70,000 CPS WHEN TESTED WITH A BROOKFIELD MODEL RVF VISCOMETER OR EQUIVALENT, USING A NUMBER 4 SPINDLE ROTATED AT 2 RPM.
 - (3) THE SHORE A HARDNESS OF THE MATERIAL AFTER CURING FOR 24 HOURS AT 77°F ± 5°F AT A RELATIVE HUMIDITY OF 50% ± 2% SHALL BE NOT LESS THAN 30 DUROMETER WHEN TESTED IN ACCORDANCE WITH ASTM-D-676.
3. DESIGN REQUIREMENTS:
 - A. SHELF LIFE - THE MATERIAL SHALL HAVE NOT LESS THAN 3 MONTHS USABLE SHELF LIFE WHEN RECEIVED BY THE PURCHASER AND STORED AT 40 - 70°F IN UNOPENED CONTAINERS.
 - B. THE MATERIAL IS INTENDED FOR POTTING MODULES OR ASSEMBLIES USED IN APOLLO GROUND SUPPORT EQUIPMENT.
 - C. WORKING TIME - THE MATERIAL SHALL HAVE A WORKING TIME OF 2.5 - 4.5 HOURS AFTER THE ADDITION OF THE CATALYST.
 - D. PROPERTIES AFTER CURING FOR 24 HOURS AT 77°F ± 5°F AND A RELATIVE HUMIDITY OF 50% ± 2%:
 - (1) THE SPECIFIC GRAVITY OF THE MATERIAL SHALL BE 1.13 ± 0.03 WHEN TESTED IN ACCORDANCE WITH ASTM-D-176 OR AN EQUIVALENT METHOD.
 - (2) THE TENSILE STRENGTH OF THE MATERIAL SHALL BE NOT LESS THAN 200 PSI WHEN TESTED IN ACCORDANCE WITH ASTM-D-412.
 - (3) THE ULTIMATE ELONGATION OF THE MATERIAL SHALL BE NOT LESS THAN 100% WHEN TESTED IN ACCORDANCE WITH ASTM-D-412.

FOR INFORMATION ONLY
CLASS B RELEASE TDR No. 05212 DATE 17 DEC 63

REPLACES REVA WITH CHANGE

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <u>J. SULLIVAN</u> DATE <u>21 NOV 63</u> CHECKED <u>E. FOSTER</u> <u>25 NOV 63</u> APPROVAL <u>W. ERICKSON</u> <u>25 NOV 63</u> APPROVAL <u>W. J. Sullivan</u> <u>3/29/64</u>		SILICONE RUBBER, ROOM TEMPERATURE VULCANIZING	
DO NOT SCALE THIS DRAWING MATERIAL SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		CODE IDENT NO.	NASA DRAWING NO.
FINAL FINISH NONE		SIZE C	1016207
NEXT ASSY	USED ON	SCALE NONE	WT
APPLICATION		SHEET 1 OF 1	



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
- SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
- EACH UNIT AND SHIPPING CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS, LOT NUMBER, DATE OF MANUFACTURE, AND EXPIRATION DATE FOR THE MATERIAL WHEN STORED IN UNOPENED CONTAINERS.

2. ACCEPTANCE AND INSPECTION:

- THIS MATERIAL SHALL BE SILICONE ELASTOMER COMPOUND CAPABLE OF BEING CURED WITHOUT THE APPLICATION OF HEAT OR PRESSURE. THE CURING AGENT SHALL BE SUPPLIED WITH THE COMPOUND IN A SEPARATE CONTAINER.
- PROPERTIES:
 - THE COLOR OF THE COMPOUND SHALL BE WHITE.
 - THE VISCOSITY OF THE UNCURED COMPOUND SHALL BE NOT GREATER THAN 70,000 CPS WHEN TESTED WITH A BROOKFIELD MODEL RVF VISCOMETER OR EQUIVALENT, USING A NUMBER 4 SPINDLE ROTATED AT 2 RPM.
 - THE SHORE A HARDNESS OF THE MATERIAL AFTER CURING FOR 24 HOURS AT $77^{\circ}\text{F} \pm 5^{\circ}\text{F}$ AT A RELATIVE HUMIDITY OF $50\% \pm 2\%$ SHALL BE NOT LESS THAN 30 DUROMETER WHEN TESTED IN ACCORDANCE WITH ASTM-D-676.

3. DESIGN REQUIREMENTS:

- SHELF LIFE - THE MATERIAL SHALL HAVE NOT LESS THAN 3 MONTHS USABLE SHELF LIFE WHEN RECEIVED BY THE PURCHASER AND STORED AT $40 - 70^{\circ}\text{F}$ IN UNOPENED CONTAINERS.
- THE MATERIAL IS INTENDED FOR POTTING MODULES OR ASSEMBLIES USED IN APOLLO GROUND SUPPORT EQUIPMENT.
- WORKING TIME - THE MATERIAL SHALL HAVE A WORKING TIME OF 2.5 - 4.5 HOURS AFTER THE ADDITION OF THE CATALYST.
- PROPERTIES AFTER CURING FOR 24 HOURS AT $77^{\circ}\text{F} \pm 5^{\circ}\text{F}$ AND A RELATIVE HUMIDITY OF $50\% \pm 2\%$:
 - THE SPECIFIC GRAVITY OF THE MATERIAL SHALL BE 1.13 ± 0.03 WHEN TESTED IN ACCORDANCE WITH ASTM-D-176 OR AN EQUIVALENT METHOD.
 - THE TENSILE STRENGTH OF THE MATERIAL SHALL BE NOT LESS THAN 200 PSI WHEN TESTED IN ACCORDANCE WITH ASTM-D-412.
 - THE ULTIMATE ELONGATION OF THE MATERIAL SHALL BE NOT LESS THAN 100% WHEN TESTED IN ACCORDANCE WITH ASTM-D-412.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

C 1016207

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	REPLACES REV. A WITH CHANGE PER CM 184901 REVISED PER TDR 07098	7 FEB 64	R.H. MEM
C	REPLACED WITH CHANGE BY REV. D PER CM-195384 REVISED PER TDR 08533	17 APR 64	J.B. EF

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05212 DATE 17 DEC 63

- Ⓑ REPLACES REVA WITH CHANGE
Ⓒ REPLACED WITH CHANGE BY REV D

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN J. SULLIVAN DATE 2 NOV 63 CHECKED E. FOSTER 25 NOV 63 APPROVAL W. ERICKSON 25 NOV 63 APPROVAL J. GILMAN 3/29/64		SILICONE RUBBER, ROOM TEMPERATURE VULCANIZING	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ± DO NOT SCALE THIS DRAWING MATERIAL SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		CODE IDENT NO. SIZE C	NASA DRAWING NO. 1016207
FINAL FINISH NONE		SCALE NONE WT	SHEET 1 OF 1
NEXT ASSY	USED ON		
APPLICATION			

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:
 - A. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
 - B. SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
 - C. EACH UNIT AND SHIPPING CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS, DATE OF MANUFACTURE, ETC.
2. ACCEPTANCE AND INSPECTION REQUIREMENTS:
 - A. THIS MATERIAL SHALL BE A SILICONE ELASTOMER COMPOUND CAPABLE OF BEING CURED WITHOUT THE APPLICATION OF HEAT OR PRESSURE. THE CURING AGENT SHALL BE SUPPLIED WITH THE COMPOUND IN A SEPARATE CONTAINER.
 - B. PROPERTIES BEFORE CURING:
 - (1) THE COLOR OF THE COMPOUND SHALL BE WHITE.
 - (2) THE VISCOSITY OF THE COMPOUND SHALL BE NOT GREATER THAN 70,000 CPS WHEN TESTED WITH A BROOKFIELD MODEL RVF VISCOMETER OR EQUIVALENT, USING A NUMBER 4 SPINDLE ROTATED AT 2 RPM.
 - C. PROPERTIES AFTER CURING:
 - (1) THE SHORE A HARDNESS OF THE MATERIAL SHALL BE NOT LESS THAN 25 DUROMETER WHEN TESTED IN ACCORDANCE WITH ASTM-D-676.
 - (2) DIELECTRIC STRENGTH OF THE MATERIAL SHALL BE NOT LESS THAN 300 VOLTS PER MIL WHEN TESTED IN ACCORDANCE WITH ASTM-D-149.
3. DESIGN REQUIREMENTS:
 - A. THE MATERIAL SHALL BE PROCESSED IN ACCORDANCE WITH ND 1002009.
 - B. THE SHELF LIFE OF THE MATERIAL SHALL BE NOT LESS THAN 4 MONTHS FROM THE DATE OF MANUFACTURE.
 - C. THE MATERIAL IS INTENDED FOR POTTING MODULES OR ASSEMBLIES FOR APOLLO GROUND SUPPORT EQUIPMENT.

PROCURE ONLY FROM APPROVED SOURCE LISTED IN ND 1002034 FOR THIS DRAWING.

MASTER

1016207

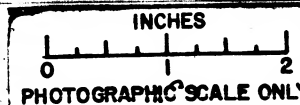
REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05212 DATE 12/17/63

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Dwg. No. <u>CORRECTION NAS 9-497</u>		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <u>J.P. Sullivan</u> DATE <u>21 Nov 63</u> CHECKED <u>Ed Foster</u> <u>25 Nov 63</u> APPROVAL <u>W. J. Eichman</u> <u>25 Nov 63</u> APPROVAL <u>L. J. Friedman</u> <u>12/16/63</u>		SILICONE RUBBER, ROOM TEMPERATURE VULCANIZING	
SEE REQUIREMENTS HEAT TREATMENT NONE FINAL FINISH NONE		SPECIFICATION CONTROL DRAWING NASA DRAWING NO. 1016207	
NASA APPROVAL <u>W. J. Eichman</u> <u>12/17/63</u> MIT APPROVAL <u>W. J. Eichman</u> <u>12/17/63</u>		CODE IDENT NO. C SCALE NONE WT	SHEET 1 OF 1



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED, SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFIRMING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:
 - A. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
 - B. SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
 - C. EACH UNIT, TUBE OR CONTAINER AND SHIPPING CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS, LOT NUMBER, DATE OF MANUFACTURE, AND EXPIRATION DATE FOR UNOPENED CONTAINERS.
2. ACCEPTANCE AND INSPECTION REQUIREMENTS:
 - A. MATERIAL: SILICONE RUBBER ADHESIVE CAPABLE OF CURING AT ROOM TEMPERATURE WITHOUT ADDITION OF A SEPARATE CATALYST.
 - B. COLOR: WHITE.
 - C. NON-VOLATILE CONTENT: 95% MINIMUM BY WEIGHT WHEN TESTED AS FOLLOWS:
 - (1) TRANSFER APPROXIMATELY 5 GRAMS OF THE MATERIAL TO A TARED CONTAINER AND SPREAD TO A THICKNESS OF ABOUT 1/8 INCH.
 - (2) WEIGH SAMPLE AND CONTAINER COMBINED.
 - (3) DETERMINE ACTUAL WEIGHT OF SAMPLE
 - (4) HEAT IN 158° ± 2°F OVEN FOR 24 ± 1 HOUR.
 - (5) COOL TO ROOM TEMPERATURE IN DESICCATOR.
 - (6) RE-WEIGH AND DETERMINE NON-VOLATILE WEIGHT.
 - (7) PERCENT, NON-VOLATILE CONTENT =
$$\frac{\text{WEIGHT OF COMPOUND AFTER HEATING}}{\text{WEIGHT OF COMPOUND BEFORE HEATING}} \times 100$$
 - D. FLOW: 2 INCHES MAXIMUM WHEN CONDITIONED AND TESTED AS FOLLOWS:
 - (1) CONDITION SAMPLE AT 77° ± 2°F AND 50 ± 5% R.H. FOR AT LEAST 6 HOURS.
 - (2) THE FLOW TEST JIG DESCRIBED IN MIL-S-7502 SHALL BE POSITIONED WITH ITS FRONT FACE UPWARD AND PLUNGER DEPRESSED TO LIMIT OF ITS TRAVEL.
 - (3) FILL RECESSED CAVITY OF JIG WITH CONDITIONED SAMPLE AND LEVEL OFF WITH THE UPPER PLANE.
 - (4) WITHIN 10 SECONDS OF FILLING AND LEVELING, THE JIG SHALL BE PLACED ON ITS END AND THE PLUNGER IMMEDIATELY ADVANCED TO THE LIMIT OF ITS FORWARD TRAVEL.
 - (5) ALLOW THE JIG TO STAND IN THE UPRIGHT POSITION FOR ONE HOUR AT 77 ± 2°F AND 50 ± 5% R.H.
 - (6) MEASURE THE FLOW OF THE MATERIAL FROM THE LOWER LIP OF THE RECESS TO THE FARTHEST POINT TO WHICH FLOW HAS ADVANCED.

PROCURE ONLY FROM APPROVED SOURCE LISTED IN ND 1002034 FOR THIS DRAWING.

MASTER

		UNLESS OTHERWISE SPECIFIED
		DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± _____ ± _____ ± _____
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
NEXT: ASSY	USED ON	FINAL FINISH
APPLICATION		NONE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>[Signature]</i> DATE 12 Dec 63 CHECKED <i>[Signature]</i> 13 Dec 63 APPROVAL <i>[Signature]</i> 19 Dec 63 APPROVAL <i>[Signature]</i> 1/3/64		ADHESIVE AND SEALANT, SILICONE RUBBER	
NASA APPROVAL <i>[Signature]</i> MIT APPROVAL <i>[Signature]</i>		CODE IDENT NO.	NASA DRAWING NO.
		C	1016208
SCALE NONE		WT	SHEET 1 OF 2

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05899 DATE 1/24/64

8029101

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FORWARDED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS (CONTINUED):

3. DESIGN REQUIREMENTS:

A. CURING RATE: 20 TO 35 MINIMUM INSTANTANEOUS SHORE A DUROMETER READING WHEN TESTED AS FOLLOWS:

- (1) APPLY THE MATERIAL TO A NON-ADHERENT SURFACE, SUCH AS POLYETHYLENE, TO A THICKNESS OF APPROXIMATELY 1/8 INCH.
- (2) CURE FOR 72 HOURS AT $77^{\circ}\text{C} \pm 2^{\circ}\text{F}$ AND $50 \pm 5\%$ R.H.
- (3) REMOVE FROM SURFACE AND FOLD IN HALF TO MAKE A TOTAL THICKNESS OF 1/4 INCH.
- (4) THE INSTANTANEOUS SHORE A DUROMETER HARDNESS SHALL BE DETERMINED FROM AN AVERAGE OF AT LEAST THREE READINGS.

B. SPECIFIC GRAVITY (CURED MATERIAL): 1.02 TO 1.12 WHEN TESTED AS FOLLOWS:

- (1) CUT THREE 1/8" X 1" X 1" SAMPLES FROM A FILM OF THE MATERIAL CURED AT $77^{\circ} \pm 2^{\circ}\text{F}$ AND $50 \pm 5\%$ R.H. FOR SEVEN DAYS.
- (2) DETERMINE WEIGHT IN AIR TO TWO DECIMAL PLACES.
- (3) SUSPEND IN DISTILLED WATER AT $77^{\circ} \pm 2^{\circ}\text{F}$ AND REWEIGH.
- (4) CALCULATE SPECIFIC GRAVITY:

$$SG = \frac{\text{WEIGHT IN AIR}}{\text{WEIGHT IN AIR MINUS WEIGHT IN WATER}}$$

- (5) THE AVERAGE OF THREE SPECIMENS SHALL CONSTITUTE THE DETERMINATION.

C. PEEL STRENGTH: THE PEEL STRENGTH SHALL NOT BE LESS THAN 20 LB/IN WHEN FAILURE IS COHESIVE.

- (1) PREPARE THREE .040" X 3" X 6" ALCLAD 2024-T3 TEST PANELS CONFORMING TO QQ-A-362 AND THREE 3" X 12" PIECES OF 30 MESH 10 MIL WIRE ALUMINUM SCREEN.
- (2) CLEAN PANELS AND SCREEN BY WIPING WITH TRICHLOROETHYLENE AND THEN WITH METHYLISOBUTYLKETONE AND WIPE DRY WITH CLEAN COTTON GAUZE BEFORE SOLVENT HAS EVAPORATED.
- (3) PRIME WITH A FILM OF SCD 1016211 JUST THICK ENOUGH TO SEE THE RED COLOR ON THE PANELS.
- (4) AIR DRY FOR A MINIMUM OF 30 MINUTES BEFORE APPLICATION OF THE ADHESIVE.
- (5) COAT EACH PANEL WITH ABOUT 1/16 INCH OF THE ADHESIVE AND IMMEDIATELY PLACE THE SCREEN OVER THE ADHESIVE LEAVING A SIX INCH LOOSE END.
- (6) APPLY A SECOND 1/16 INCH THICK COAT OF THE ADHESIVE AND CURE FOR 7 DAYS AT $77^{\circ} \pm 2^{\circ}\text{F}$ AND $50 \pm 5\%$ R.H.
- (7) CUT A ONE INCH WIDE STRIP THROUGH THE ADHESIVE AND THE SCREEN TO THE PANEL AND EXTENDED TO THE LOOSE END OF THE SCREEN.
- (8) UNDERCUT THE ADHESIVE ABOUT 1/2 INCH AT THE ADHESIVE-PANEL INTERFACE.
- (9) CLAMP THE LOOSE END OF THE SCREEN IN ONE JAW AND THE ADJACENT END OF THE PANEL IN THE OTHER JAW.

REQUIREMENTS (CONTINUED):

- (10) THE TESTING MACHINE AND ITS OPERATION SHALL BE AS SPECIFIED IN FEDERAL TEST METHOD STD-601, METHOD 8031, EXCEPT THE DIRECTION OF PULL SHALL BE 180° AND JAW SEPARATION RATE TWO INCHES PER MINUTE.

- (11) THE PEEL STRENGTH SHALL BE MEASURED AS THE AVERAGE PULL IN POUNDS PER INCH REQUIRED TO SEPARATE THE COATING FROM THE METAL SURFACE. IF SEPARATION OCCURS AT THE SCREEN, UNDERCUT AS IN (8) IN AN EFFORT TO OBTAIN ADHESIVE FAILURE. REPEAT UNTIL MAXIMUM READINGS CAN BE OBTAINED.

- (12) IF THE COATING SEPARATES IN COHESION FROM AT LEAST 80% OF THE PANEL, THE PEEL STRENGTH SHALL BE CONSIDERED AS GREATER THAN THE MEASURED VALUE.

- D. SHELF LIFE: 6 MONTHS MINIMUM AFTER RECEIPT FROM THE SUPPLIER WHEN STORED BELOW 90°F IN SEALED CONTAINERS.

- E. INTENDED USE: BONDING CURED SILICONE RUBBER SECTIONS TOGETHER OR TO DIS-SIMILAR MATERIAL.

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05899 DATE 1/22/64

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>J. Sullivan</i> DATE <i>12 Dec 63</i> CHECKED <i>W. D. Dill</i> 12 Dec 63 APPROVAL <i>J. Sullivan</i> 12 Dec 63 APPROVAL <i>J. Sullivan</i> 1/13/64		ADHESIVE AND SEALANT, SILICONE RUBBER	
DO NOT SCALE THIS DRAWING MATERIAL		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT		NASA APPROVAL <i>J. Sullivan</i>	CODE IDENT NO. SIZE C
FINAL FINISH		MIT APPROVAL <i>J. Sullivan</i> 1/22/64	NASA DRAWING NO. 1016208
NEXT ASSY USED ON		SCALE NONE WT	SHEET 2 OF 2
APPLICATION			

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT ASSUMES NO RESPONSIBILITY FOR ANY OMISSION, MISSTATEMENT, OR THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFIRMING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREIN.

1. GENERAL REQUIREMENTS:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
- EACH SHIPPING AND UNIT CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS, LOT NUMBER, FLASH POINT, DATE OF MANUFACTURE, AND EXPIRATION DATE FOR UNOPENED CONTAINERS.

2. ACCEPTANCE AND INSPECTION REQUIREMENTS:

A. MATERIAL:

- AIR DRYING PRIMER CAPABLE OF PROVIDING AN IMPROVED BONDING SURFACE ON MATERIALS PRELIMINARY TO APPLICATION OF 1016208, SILICONE RUBBER ADHESIVE AND SEALANT.

B. COLOR: RED

C. PHYSICAL PROPERTIES:

- SPECIFIC GRAVITY: 0.760 TO 0.770 WHEN DETERMINED IN ACCORDANCE WITH ASTM-D-1298 EXCEPT THAT THE CONSTANT TEMPERATURE BATH SHALL BE CONTROLLED TO $25^{\circ} \pm 0.2^{\circ}\text{C}$ AND 1" DIAMETER X 8" TEST TUBES SHALL BE USED AS HYDROMETER JARS.
- NON-VOLATILES: 3.5 TO 5.5% WHEN DETERMINED IN ACCORDANCE WITH THE FOLLOWING PROCEDURE:
FILL A 2 ML CAPACITY SYRINGE (WITHOUT NEEDLE) TO APPROXIMATELY THE 1.5 TO 1.6 ML MARK WITH THE SAMPLE TO BE TESTED. WEIGH TO THE NEAREST 0.1 MG AND RECORD AS WEIGHT "A". DISCHARGE THE SAMPLE INTO A 60 MM DIAMETER TARED ALUMINUM WEIGHING CUP, (WEIGHT "D") AND REWEIGH THE SYRINGE. RECORD AS WEIGHT "B". PLACE THE ALUMINUM CUP INTO A GRAVITY FLOW OVEN MAINTAINED AT $150^{\circ} \pm 2^{\circ}\text{C}$ FOR 2 HOURS. COOL TO ROOM TEMPERATURE IN A DESICCATOR AND REWEIGH. RECORD AS WEIGHT "C".

$$\text{PERCENT NON-VOLATILES} = \frac{(C-D) 100}{A - B}$$

- VISCOSITY: 0.8 TO 1.0 CENTISTOKES AT 25°C WHEN TESTED WITH A UBBELOHDE VISCOMETER IN ACCORDANCE WITH ASTM-D-445 EXCEPT AS FOLLOWS:
 - EFFLUX TIME SHALL BE GREATER THAN 80 SECONDS.
 - REPEATABILITY OF READINGS SHALL BE WITHIN 0.2 SECONDS.

PROCURE ONLY FROM APPROVED SOURCE LISTED IN ND 1002034 FOR THIS DRAWING.

MASTER

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON
		FRACTIONS DECIMALS ANGLES \pm \pm \pm
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		NONE
NEXT ASSY	USED ON	
		APPLICATION

3. DESIGN REQUIREMENTS:

- SHELF LIFE: THE MATERIAL SHALL HAVE A MINIMUM USABLE SHELF LIFE OF 9 MONTHS WHEN RECEIVED BY THE PURCHASER AND STORED AT 80°F OR LOWER IN UNOPENED CONTAINERS.
- REFRACTIVE INDEX: 1.4170 TO 1.4200 WHEN TESTED IN ACCORDANCE WITH ASTM-D-1218.
- PEEL STRENGTH: WHEN APPLIED AND CURED AS SPECIFIED IN 1016208, THIS MATERIAL SHALL BE CAPABLE OF PROVIDING A PRIMED SURFACE NECESSARY TO IMPART THE PEEL STRENGTH REQUIREMENTS OF 1016208.
- INTENDED USE: THIS MATERIAL MAY BE USED AS A SURFACE PREPARATION PRELIMINARY TO APPLICATION OF 1016208 TO IMPROVE BONDING PROPERTIES OF THE ADHESIVE.

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 06207 DATE 2-4-64

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <u>Bender</u> DATE <u>9-JAN-64</u> CHECKED <u>M. Manning</u> <u>13 Jan 64</u>		PRIMER, SILICONE RUBBER ADHESIVE AND SEALANT	
APPROVAL <u>[Signature]</u> <u>13 Jan 64</u> APPROVAL <u>[Signature]</u> <u>13 Jan 64</u>		SPECIFICATION CONTROL DRAWING	
NASA APPROVAL <u>[Signature]</u> <u>13 Jan 64</u>		CODE IDENT NO.	NASA DRAWING NO.
MIT APPROVAL <u>[Signature]</u> <u>13 Jan 64</u>		SIZE C	1016211
SCALE NONE		WT	SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY AND ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE DRAWING, SPECIFICATION, OR OTHER DATA IS IN ANY WAY SUPPLIED BY THE UNITED STATES GOVERNMENT, OR THAT IT IS NOT TO BE REGARDED AS IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSIONS TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
- EACH SHIPPING AND UNIT CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS AND LOT NUMBER.

2. ACCEPTANCE AND INSPECTION:

- MATERIAL - CELLULAR RUBBER TUBING MADE OF BUTADIENE-ACRYLONITRILE COPOLYMER.
- CONSTRUCTION -
 - TYPE - THE TUBING SHALL BE OF THE EXPANDED CLOSED CELL TYPE CONSTRUCTION. THE CELLULAR STRUCTURE SHALL BE UNIFORM IN CELL SIZE AND DISTRIBUTION.
 - SIZE - $5/8^{+1/8}_{-0}$ INCH I.D. X $1/2^{+1/16}_{-0}$ INCH WALL X 6 FT. MINIMUM LENGTH. SHORT LENGTHS NOT LESS THAN 3 FT. LONG SHALL BE PERMITTED FOR 10% OF TOTAL LENGTH FURNISHED. THE TUBING SHALL BE FURNISHED SLIT ON ONE SIDE TO ALLOW EASE OF APPLICATION OVER HOSE, PIPE OR TUBING.
 - SURFACE CONDITION - THE SURFACE OF THE TUBING SHALL CONSIST OF A SMOOTH NATURAL SKIN FORMED BY DIE CONTACT.
- COLOR - THE COLOR OF THE TUBING SHALL BE BLACK.
- PHYSICAL PROPERTIES - WHEN TESTED AS SPECIFIED THE MATERIAL SHALL COMPLY TO THE REQUIREMENTS LISTED IN TABLE I.

3. DESIGN REQUIREMENTS:

- PHYSICAL PROPERTIES - WHEN TESTED AS SPECIFIED THE MATERIAL SHALL COMPLY WITH THE REQUIREMENTS LISTED IN TABLE II.
- INTENDED USE - THIS MATERIAL IS INTENDED TO BE USED AS THERMAL INSULATION OVER COOLANT TRANSFER HOSES WITHIN A TEMPERATURE RANGE OF -20°F TO 220°F.

129101

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 06983 DATE 3/17/64

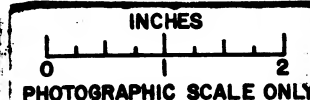
MASTER

SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ± DO NOT SCALE THIS DRAWING MATERIAL SEE REQUIREMENTS HEAT TREATMENT NONE FINAL FINISH NONE	
NEXT ASSY	USED ON
APPLICATION	

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. CONTRACT NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>W. J. Rhine</i> DATE 5 FEB 64 CHECKED <i>W. J. Rhine</i> DATE 6 FEB 64 APPROVAL <i>W. J. Rhine</i> DATE 7 FEB 64		TUBING, CELLULAR INSULATION	
APPROVAL <i>W. J. Rhine</i> DATE 7 FEB 64		SPECIFICATION CONTROL DRAWING	
NASA APPROVAL <i>W. J. Rhine</i> DATE 13-17-64		CODE IDENT NO. SIZE C	NASA DRAWING NO. 1016213
MIT APPROVAL <i>W. J. Rhine</i> DATE 17 FEB 64		SCALE NONE WT	SHEET 1 OF 2



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELAYED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT WILL NOT BE RESPONSIBLE FOR ANY OBLIGATION WHATSOEVER, INCLUDING THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

TABLE I

PROPERTY	TEST METHOD	REQUIREMENT
WATER ABSORPTION DENSITY AT 25° ± 2°C	ASTM-D-1056-60T A. MEASURE SPECIMEN IN ACCORDANCE WITH ASTM-D-1056 AND COMPUTE VOLUME. B. WEIGH SPECIMEN. C. COMPUTE DENSITY DENSITY = $\frac{b}{a}$	1% MAXIMUM 7 TO 10 PCF

TABLE II

PROPERTY	TEST METHOD	REQUIREMENT
THERMAL CONDUCTIVITY	ASTM-C-177	0.3 BTU/INCH, HOUR, SQ. FT., °F MAXIMUM
TENSILE STRENGTH	ASTM-D-412	80 PSI MINIMUM
ELONGATION	ASTM-D-412	225% MINIMUM
FLAME RESISTANCE	----	SHALL BE SELF EXTINGUISHING WHEN WITHDRAWN FROM AN OPEN FLAME.

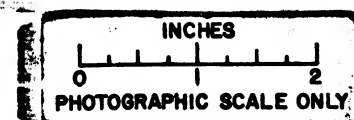
FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 06983 DATE 5/17/64

MASTER

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± ± ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		HEAT TREATMENT
		FINAL FINISH
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. CONTRACT NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Patterson</i> DATE <i>8 FEB 64</i>		TUBING, CELLULAR INSULATION	
CHECKED <i>Ed Foster</i> 6 FEB 64			
APPROVAL <i>Ed Foster</i> 7 FEB 64			
APPROVAL <i>L. Gelman</i> 3/2/64			
NASA APPROVAL <i>W. J. Rhine</i> 03-17-64		SPECIFICATION CONTROL DRAWING	
MIT APPROVAL <i>W. J. Rhine</i> 17 Apr 64		NASA DRAWING NO.	
		CODE IDENT NO.	SIZE
		C	1016213
		SCALE	WT
		SHEET 2 OF 2	



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFIRMING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

- GENERAL:
 - INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
 - SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
 - EACH SHIPPING UNIT AND UNIT CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND /OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS, LOT NUMBER, DATE OF MANUFACTURE, AND EXPIRATION DATE FOR UNOPENED CONTAINERS.

2. ACCEPTANCE AND INSPECTION REQUIREMENTS:

- MATERIAL: THE MATERIAL SHALL BE A ONE PART ADHESIVE CONTAINING A NEOPRENE RUBBER ELASTOMER, SYNTHETIC RESINS, AND FILLERS DISPERSED IN HYDROCARBON AND KETONE SOLVENTS.

B. COLOR: TAN

C. PERCENT SOLIDS: 24 ±1% WHEN TESTED AS FOLLOWS:

- WEIGH A 3 TO 4 GRAM OF THE THOROUGHLY STIRRED SAMPLE IN AN 8 CM DIA FLAT BOTTOMED TARED ALUMINUM DISH.

- HEAT THE DISH WITH SAMPLE IN AN OVEN MAINTAINED AT 135° ±2°C FOR 30 MINUTES ±15 SECONDS.

- COOL THE DISH AND SAMPLE TO ROOM TEMPERATURE IN A DESSICATOR AND REWEIGH.

- DETERMINE PERCENT SOLIDS AS FOLLOWS:

$$\% \text{ SOLIDS} = \frac{\text{FINAL WT. OF ADHESIVE}}{\text{INITIAL WT. OF ADHESIVE}} \times 100$$

ALL WEIGHINGS SHOULD BE MADE TO THE NEAREST MILLIGRAM. TESTS SHALL BE RUN IN DUPLICATE AND THE RESULTS AVERAGED.

- VISCOSITY: 450 TO 650 CPS AT 77°F WHEN TESTED IN ACCORDANCE WITH ASTM D 1824 USING A BROOKFIELD VISCOMETER MODEL RVF WITH A NO. 1 SPINDLE AT 10 RPM.

- WEIGHT PER GALLON: 7 ±0.2 LB. WHEN TESTED IN ACCORDANCE WITH FEDERAL TEST METHOD STANDARD NO. 141, METHOD 4184.

TABLE 1

PROPERTY	CONDITION	REQUIREMENTS (1 LB. MIN.)
SHEAR STRENGTH 3/4" OVERLAP 2" WIDTH	INITIAL, AT 24°C	200
	HOT, AT 60°C	75
	WET, AFTER IMMERSION IN DISTILLED WATER FOR 24 HOURS AT 24°C	200
	OIL SOAKED, AFTER IMMERSION IN LUBRICATING OIL FOR 24 HOURS AT 70°C	190
STRIP ADHESION STRENGTH	AS RECEIVED AFTER STORAGE AFTER AGING OF BONDS	9.0

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

1016217

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 11588	SEP 64	JWP EF

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 07379 DATE 4/7/64

REQUIREMENTS (CONTINUED)

3. DESIGN REQUIREMENTS:

- PHYSICAL PROPERTIES: WHEN TESTED IN ACCORDANCE WITH MIL-A-5092, THE SHEAR AND ADHESION STRENGTHS OF BONDED JOINTS SHALL COMPLY WITH THE REQUIREMENTS SPECIFIED IN TABLE 1.

APPLICATION OF THE ADHESIVE SHALL BE IN ACCORDANCE

WITH THE FOLLOWING:

- FAYING SURFACES OF DUCK OR CANVAS SPECIMENS SHALL RECEIVE TWO COATS OF THE ADHESIVE AND THE ALCLAD ALUMINUM ONE COAT. THE ADHESIVE SHALL BE ALLOWED TO DRY UNTIL NON-TACKY TO THE TOUCH PRIOR TO APPLICATION OF THE SECOND COAT AND BEFORE JOINING THE SPECIMENS.

- SHELF LIFE: THE MATERIAL SHALL HAVE 9 MONTHS MINIMUM USABLE SHELF LIFE WHEN RECEIVED BY THE PURCHASER AND STORED AT 80°F MAX. IN UNOPENED CONTAINERS.

- INTENDED USE: THIS MATERIAL IS INTENDED FOR USE AS AN ADHESIVE IN JOINING SEAMS IN NEOPRENE RUBBER INSULATING MATERIALS WHERE TEMPERATURE ENVIRONMENT WILL NOT EXCEED 200°F.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± ± ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		NONE
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DWG NO	DATE	ADHESIVE, RUBBER	
DRAWN <i>Red Turner</i>	26 MAR 64	SPECIFICATION CONTROL DRAWING	
CHECKED <i>Ed Foster</i>	27 MAR 64		
APPROVAL <i>[Signature]</i>	27 MAR 64	NASA DRAWING NO. 1016217	
APPROVAL <i>[Signature]</i>	27 MAR 64		
NASA APPROVAL <i>[Signature]</i>		CODE IDENT NO.	SIZE
MIT APPROVAL <i>[Signature]</i>		C	C
		SCALE	WT
			SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER. AND THE ACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- B. SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
- C. EACH SHIPPING UNIT AND UNIT CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND /OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS, LOT NUMBER, DATE OF MANUFACTURE, AND EXPIRATION DATE FOR UNOPENED CONTAINERS.

2. ACCEPTANCE AND INSPECTION REQUIREMENTS:

- A. MATERIAL: THE MATERIAL SHALL BE A ONE PART ADHESIVE CONTAINING A NEOPRENE RUBBER ELASTOMER, SYNTHETIC RESINS, AND FILLERS DISPERSED IN HYDROCARBON AND KETONE SOLVENTS.
- B. COLOR: TAN
- C. PERCENT SOLIDS: 25 ±1.0% WHEN TESTED AS FOLLOWS:
- (1) WEIGH A 3 TO 4 GRAM OF THE THOROUGHLY STIRRED SAMPLE IN AN 8 CM DIA FLAT BOTTOMED TARED ALUMINUM DISH EQUIPPED WITH A STOUT WIRE STIRRER.
- (2) HEAT THE DISH WITH SAMPLE IN AN OVEN MAINTAINED AT 135° ±2°C FOR 30 MINUTES ±15 SECONDS. THE SAMPLE SHALL BE STIRRED EVERY 5 MINUTES DURING HEATING TO BREAK UP SKINS THAT MAY FORM.
- (3) COOL THE DISH AND SAMPLE TO ROOM TEMPERATURE IN A DESSICATOR AND REWEIGH.
- (4) DETERMINE PERCENT SOLIDS AS FOLLOWS:

$$\% \text{ SOLIDS} = \frac{\text{FINAL WT. OF ADHESIVE}}{\text{INITIAL WT. OF ADHESIVE}} \times 100$$

ALL WEIGHINGS SHOULD BE MADE TO THE NEAREST MILLIGRAM. TESTS SHALL BE RUN IN DUPLICATE AND THE RESULTS AVERAGED.

- D. VISCOSITY: 450 TO 650 CPS AT 77°F WHEN TESTED IN ACCORDANCE WITH ASTM D 1824 USING A BROOKFIELD VISCOMETER MODEL RVF WITH A NO. 1 SPINDLE AT 10 RPM.
- E. WEIGHT PER GALLON: 7 ±0.2 LB. WHEN TESTED IN ACCORDANCE WITH FEDERAL TEST METHOD STANDARD NO. 141, METHOD 4184.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

1129101

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 07379 DATE 4/7/64

REQUIREMENTS (CONTINUED)

3. DESIGN REQUIREMENTS:

- A. PHYSICAL PROPERTIES: WHEN TESTED IN ACCORDANCE WITH MIL-A-5092, THE SHEAR AND STRIP ADHESION STRENGTHS OF BONDED JOINTS SHALL COMPLY WITH THE REQUIREMENTS SPECIFIED FOR MIL-A-5092, TYPE II MATERIAL. APPLICATION OF THE ADHESIVE SHALL BE IN ACCORDANCE WITH THE FOLLOWING:
- (1) FAYING SURFACES OF DUCK OR CANVAS SPECIMENS SHALL RECEIVE TWO COATS OF THE ADHESIVE AND THE ALCLAD ALUMINUM ONE COAT. THE ADHESIVE SHALL BE ALLOWED TO DRY UNTIL NON-TACKY TO THE TOUCH PRIOR TO APPLICATION OF THE SECOND COAT AND BEFORE JOINING THE SPECIMENS.
- B. SHELF LIFE: THE MATERIAL SHALL HAVE 9 MONTHS MINIMUM USABLE SHELF LIFE WHEN RECEIVED BY THE PURCHASER AND STORED AT 80°F MAX. IN UNOPENED CONTAINERS.
- C. INTENDED USE: THIS MATERIAL IS INTENDED FOR USE AS AN ADHESIVE IN JOINING SEAMS IN NEOPRENE RUBBER INSULATING MATERIALS WHERE TEMPERATURE ENVIRONMENT WILL NOT EXCEED 200°F.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Red Turner</i> DATE 25 MAR 64 CHECKED <i>Ed Foster</i> 27 MAR 64 APPROVAL <i>Ed Foster</i> 27 MAR 64 APPROVAL <i>J. Goldman</i> 17 APR 64		ADHESIVE, RUBBER	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ± DO NOT SCALE THIS DRAWING MATERIAL SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		NASA APPROVAL <i>h.d. j.</i> 4/7/64	CODE IDENT NO. SIZE C
FINAL FINISH NONE		MIT APPROVAL <i>h.d. j.</i> 4/7/64	NASA DRAWING NO. 1016217
NEXT ASSY USED ON		SCALE WT	SHEET 1 OF 1
APPLICATION			

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1016220

REVISIONS

SYM DESCRIPTION DATE APPROVAL

REQUIREMENTS:

1. GENERAL:

- A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED BY MIL-D-70327.
- B. SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
- C. EACH SHIPPING AND UNIT CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS, LOT NUMBER, DATE OF MANUFACTURE, AND EXPIRATION DATE FOR THE MATERIAL WHEN STORED IN UNOPENED CONTAINERS.

2. ACCEPTANCE AND INSPECTION REQUIREMENTS:

- A. THE MATERIAL SHALL BE A TWO-PART EPOXY ADHESIVE CONSISTING OF A FILLED EPOXY RESIN DESIGNATED AS 1016220-1 AND A LIQUID AMINE ACTIVATOR DESIGNATED AS 1016220-2.
- B. PROPERTIES PRIOR TO CURING:
- (1) VISCOSITY: 1016220-1 - 150 POISES MAXIMUM AT 160°F ±2°F AS DETERMINED BY A BROOKFIELD VISCOMETER MODEL RVF OR EQUIVALENT USING A NUMBER 4 SPINDLE.
- (2) COLOR: 1016220-1 - CREAM; 1016220-2 - NO. 12 MAXIMUM PER ASTM-D-1544.
- (3) FLASH POINT: 1016220-2 - +300°F MINIMUM PER ASTM-D-92
- C. PROPERTIES AFTER MIXING 1.07 ± 0.01 PARTS 1016220-2 WITH 100 PARTS 1016220-1 AND CURING FOR A MINIMUM OF 2 HOURS AT 200°F ± 5°F.
- (1) SPECIFIC GRAVITY: 1.85 - 1.89 PER ASTM-D-792 OR AN EQUIVALENT METHOD.
- (2) LAP SHEAR STRENGTH: 1200 PSI MINIMUM PER ASTM-D-1002 OR AN EQUIVALENT METHOD.

3. DESIGN REQUIREMENTS:

- A. SHELF LIFE: THE MATERIAL SHALL HAVE NOT LESS THAN 9 MONTHS USABLE SHELF LIFE WHEN RECEIVED BY THE PURCHASER AND STORED AT A TEMPERATURE OF 40° - 80°F. IN UNOPENED CONTAINERS.

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 02603 DATE

4/14/64

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± ± ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		NONE
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Janowski</i> DATE 27 MAR 64		EPOXY RESIN ADHESIVE	
CHECKED <i>Ed Foster</i> 30 MAR 64		SPECIFICATION CONTROL DRAWING	
APPROVAL <i>W. Eichen</i> 30 MAR 64		NASA DRAWING NO. 1016220	
APPROVAL <i>Gediman</i> 4/13/64		SCALE NONE WT SHEET 1 OF 1	
NASA APPROVAL <i>G. C. Miller</i> 4/14/64		MIT APPROVAL <i>W. Eichen</i> 4/14/64	

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REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
- EACH SHIPPING AND UNIT CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS, LOT NUMBER, DATE OF MANUFACTURE, AND EXPIRATION DATE FOR THE MATERIAL WHEN STORED IN UNOPENED CONTAINERS.

2. ACCEPTANCE AND INSPECTION:

- MATERIAL - THE MATERIAL SHALL BE A THIXOTROPIC, TWO-PART EPOXY ENCAPSULATING COMPOUND WITH EACH PART CONTAINING A FINELY DIVIDED INERT FILLER. PART "A" SHALL BE DESIGNATED AS 1016221-1 AND PART B SHALL BE DESIGNATED AS 1016221-2.
- PROPERTIES PRIOR TO MIXING OR CURING:
 - COLOR 1016221-1 BROWN
1016221-2 DARK GREY
 - WEIGHT PER GALLON
1016221-1 13.65 ± 0.10 POUNDS/GAL.
1016221-2 11.72 ± 0.15 POUNDS/GAL.

3. DESIGN REQUIREMENTS:

- PROPERTIES AFTER MIXING ONE PART BY WEIGHT OF 1016221-1 WITH TWO PARTS BY WEIGHT OF 1016221-2 AND CURING AT 250°F ± 5°F FOR 2.5 - 3 HOURS:
 - SPECIFIC GRAVITY - 1.49 ± 0.02 WHEN TESTED IN ACCORDANCE WITH ASTM-D-792 OR AN EQUIVALENT METHOD.
 - MECHANICAL SHOCK RESISTANCE - 7.5 POUNDS MINIMUM WHEN TESTED IN ACCORDANCE WITH MIL-I-16923.
 - DIELECTRIC STRENGTH - 425 VOLTS/MIL MINIMUM WHEN TESTED IN ACCORDANCE WITH ASTM-D-149.
 - FLAMMABILITY - THE MATERIAL SHALL BE SELF-EXTINGUISHING WHEN TESTED IN ACCORDANCE WITH MIL-I-16923.
- SHELF LIFE - THE MATERIAL SHALL HAVE NOT LESS THAN 4 MONTHS USABLE SHELF LIFE WHEN RECEIVED BY THE PURCHASER AND STORED AT 40° - 80°F IN UNOPENED CONTAINERS.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

1229101

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 02603 DATE 4/14/64

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS DWG NO. 497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Splane</i> DATE 1 APR 64 CHECKED <i>Ed Foster</i> 2 APR 64 APPROVAL <i>W. E. Fitch</i> 2 APR 64 APPROVAL <i>L. J. Gorman</i> 4/13/64		EPOXY RESIN	
NASA APPROVAL <i>G. C. W. J. J. J. J.</i> 4/14/64 MIT APPROVAL <i>W. E. Fitch</i> 4/14/64		SPECIFICATION CONTROL DRAWING NASA DRAWING NO. 1016221	
SCALE NONE		SHEET 1 OF 1	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERE TO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
- EACH SHIPPING AND UNIT CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS, LOT NUMBER, DATE OF MANUFACTURE, AND EXPIRATION DATE FOR MATERIAL IN UNOPENED CONTAINERS.

2. ACCEPTANCE AND INSPECTION:

- | PHYSICAL PROPERTIES | VALUE | TEST METHOD |
|---------------------|-------------------------|--------------------|
| THICKNESS | 4-1/2 ± 1/2 MIL | FED. SPEC. UU-P-31 |
| ADHESION | 30 OZ./IN OF WIDTH MIN. | ASTM D-1000 |
| ULTIMATE STRETCH | 90% MIN. | FED. SPEC. UU-P-31 |
| TENSILE STRENGTH | 15 LBS/IN OF WIDTH MIN. | FED. SPEC. UU-P-31 |
- DIMENSIONS - THE MARKERS SHALL BE 1/2 ± 1/32 INCH LONG.
- THE MATERIAL SHALL BE DESIGNATED AS FOLLOWS:

CONSECUTIVE NOS. (3 COMPLETE SETS PER CARD) PRINTED ON		MARKERS PER ROW	MARKERS PER CARD
PART NUMBER	MARKERS		
1016222-1	0 THRU 49	50	150
↓	-2 50 THRU 99	50	150
	-3 100 THRU 132	33	99
	-4 133 THRU 165	33	99
	-5 166 THRU 198	33	99
	-6 199 THRU 231	33	99
↓	-7 232 THRU 264	33	99

3. DESIGN REQUIREMENTS:

- SHELF LIFE - THIS MATERIAL SHALL HAVE A MINIMUM USABLE SHELF LIFE OF 9 MONTHS WHEN RECEIVED BY THE PURCHASER AND STORED AT ROOM TEMPERATURE (73 ± 5°F) IN UNOPENED CONTAINERS.

PROCURE ONLY FROM APPROVED SOURCES LISTED IN ND 1002034 FOR THIS DRAWING.

1016222

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 07603

DATE

4/14/64

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS DOW NO. 497 CONTRACT 497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Splane</i> DATE <i>2 APR 64</i> CHECKED <i>Ed Foster</i> APPROVAL <i>John Stillman</i> APPROVAL <i>Edman 4/13/64</i>		REINFORCED PLASTIC LABEL MATERIAL	
SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		NASA APPROVAL <i>C. H. 4/14/64</i>	CODE IDENT NO. SIZE C
FINAL FINISH NONE		MIT APPROVAL <i>W. H. 4/14/64</i>	NASA DRAWING NO. 1016222
APPLICATION		SCALE NONE WT	SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
- EACH SHIPMENT OF CASTINGS SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, LOT OR HEAT NUMBER, AND DATE OF MANUFACTURE. EACH CASTING SHALL BE MARKED WITH THE NASA DRAWING NUMBER BY USE OF CAST RAISED NUMERALS OR BY IMPRESSION OF MARKINGS ON A CAST-IN, RAISED PAD. WHEN NO LOCATION IS INDICATED ON THE DRAWINGS, THE SUPPLIER SHALL LOCATE THE MARKINGS TO MINIMIZE ANY DELETERIOUS EFFECTS ON STRENGTH OF THE CASTINGS.

2. ACCEPTANCE AND INSPECTION:

- THIS MATERIAL SHALL BE A CORROSION RESISTANT GRADE OF CAST IRON.
- COPPER CONTENT: THIS GRADE OF GRAY CAST IRON SHALL CONTAIN 0.20 TO 0.35 PERCENT COPPER WHEN TESTED IN ACCORDANCE WITH METHODS 111.1 OR 112.1 OF STANDARD FED-STD-151. IN CASE OF DISPUTE, METHOD 111.1 SHALL BE USED AS THE BASIS FOR ACCEPTANCE.
- CONDITION: THE CASTINGS SHALL BE FURNISHED IN THE NORMALIZED AND TEMPERED CONDITION. THIS HEAT TREATED CONDITION SHALL BE ATTAINED BY HEATING THE CASTINGS AT 1575°F ± 25°F FOR 2 HOURS, FOLLOWED BY AIR COOLING AND TEMPERING AT 1050°F ± 25°F FOR 1 HOUR.
- PROPERTIES: PROPERTIES FOR THE AS-CAST AND THE HEAT TREATED CONDITIONS SHALL BE THE FOLLOWING:
 - HARDNESS: WHEN DETERMINED IN ACCORDANCE WITH ASTM E10-61, THE MATERIAL SHALL HAVE A MINIMUM HARDNESS OF 190 BRINELL.
 - TENSILE STRENGTH: WHEN TESTED IN ACCORDANCE WITH ASTM A48-62, THE MATERIAL SHALL HAVE A MINIMUM TENSILE STRENGTH OF 40,000 PSI.

3. DESIGN REQUIREMENTS:

- INTENDED USE: THE MATERIAL COVERED BY THIS SPECIFICATION IS INTENDED FOR USE IN THE APOLLO GUIDANCE AND NAVIGATION SYSTEM WHERE A STABLE, CORROSION RESISTANT CAST IRON IS REQUIRED.

PROCURE ONLY MEEHANITE TYPE CC FROM FOUNDRIES LICENSED BY THE MEEHANITE METAL CORPORATION, WHITE PLAINS, NEW YORK.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± ± ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		NONE
NEXT ASSY	USED ON	
		APPLICATION

£229101

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 10922 DATE

7/14/64

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS CONTRACT NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN BY <i>[Signature]</i> DATE 28 APR 64 CHECKED <i>[Signature]</i> DATE 29 APR 64 APPROVAL <i>[Signature]</i> DATE 29 APR 64 APPROVAL <i>[Signature]</i> DATE 7/2/69		CORROSION RESISTANT CAST IRON	
NASA APPROVAL <i>[Signature]</i> DATE 7/14/64 MIT APPROVAL <i>[Signature]</i> DATE 7/14/64		SPECIFICATION CONTROL DRAWING NASA DRAWING NO. 1016223	
SCALE NONE		WT	SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREIN.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
- EACH SHIPPING AND UNIT CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS, LOT NUMBER, DATE OF MANUFACTURE, AND EXPIRATION DATE FOR MATERIAL IN UNOPENED CONTAINERS.

2. ACCEPTANCE AND INSPECTION:

- MATERIAL - THE MATERIAL SHALL BE A ONE PART THERMOPLASTIC ADHESIVE WITH A SOLIDS CONTENT OF PIGMENT REINFORCED SYNTHETIC RUBBER AND SYNTHETIC PLASTIC RESIN. THE PREDOMINANT SOLVENT SHALL BE METHYL ETHYL KETONE.
- PROPERTIES - THE MATERIAL SHALL COMPLY WITH THE REQUIREMENTS SPECIFIED IN TABLE I.

3. DESIGN REQUIREMENTS:

- SHELF LIFE - THE MATERIAL SHALL HAVE A MINIMUM USABLE SHELF LIFE OF 6 MONTHS WHEN RECEIVED BY THE PURCHASER AND STORED BELOW 80°F IN UN-OPENED CONTAINERS.
- FLASH POINT - 16.5° TO 25°F WHEN TESTED IN ACCORDANCE WITH ASTM D 56.
- BOND STRENGTH - 1200 PSI MINIMUM, WHEN TESTED IN ACCORDANCE WITH ASTM D 1002. PREPARATION OF TEST SPECIMENS SHALL BE AS FOLLOWS:
 - PREPARE TWO .064 ± .005" X 4" X 6" COLD ROLLED STEEL PANELS.
 - IF OXIDE, SCALE OR RUST IS PRESENT, SAND, SAND BLAST, WIRE BRUSH OR BUFF TO REMOVE.
 - DEGREASE SURFACES OF THE PANELS BY ALKALINE CLEANING, VAPOR DEGREASING, SOLVENT WIPING OR SOLVENT DEGREASING.
 - RINSE IN 150° TO 212°F WATER.
 - TEST SURFACE WITH WATER FILM. THE WATER SHALL FLOW OFF THE PANELS IN A CONTINUOUS BREAK FREE FILM.
 - DRY THE PANELS IN AN OVEN OR IN A HOT AIR STREAM.
 - BRUSH A UNIFORM FILM OF THE UNDILUTED MATERIAL ON THE SURFACE OF EACH PANEL EXTENDING ACROSS THE 6" DIMENSION FROM THE EDGE INWARD A MINIMUM OF 3/4 INCH AND OF SUFFICIENT THICKNESS TO FORM A CURED GLUE LINE 1/2 TO 1-1/2 MILS THICK.
 - ALLOW THE ADHESIVE TO DRY TO A TACK FREE CONDITION.
 - PLACE THE PANELS, ADHESIVE SIDE UP, ON A METAL SURFACE MAINTAINED AT 350° ± 10°F FOR 2.0 ± 0.1 MINUTES.
 - ASSEMBLE PANELS BY PLACING THE COATED FACES TOGETHER AND MAINTAIN A 0.5 ± 0.05 - 00 LAP AS SPECIFIED IN ASTM D 1002.
 - CURE AT 350° ± 10°F AND 500 ± 20 PSI JOINT PRESSURE.
 - CUT 5 TEST SPECIMENS FROM THE BONDED PANELS IN ACCORDANCE WITH ASTM D 1002.

- INTENDED USE: THIS MATERIAL IS INTENDED TO BE USED AS AN ADHESIVE FOR JOINING METALS AND NON-METALLIC MATERIALS TO EACH OTHER OR IN COMBINATIONS.

PROCURE ONLY FROM APPROVED SOURCES LISTED IN ND 1002034 FOR THIS DRAWING.

1016224

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	CHANGE IN ACCORDANCE WITH D.O.-45516	17-APR-64	J.B. EF

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 08429 DATE 5/12/64

TABLE I

PROPERTY	TEST METHOD	REQUIREMENTS
COLOR	VISUAL	TAN
WEIGHT PER GALLON	ASTM D 1875	7.4 ± 0.1 LB.
PERCENT SOLIDS	ASTM D 553	30 ± 1%
VISCOSITY AT 78°F	ASTM D 1824*	2250 TO 4250 CENTIPOSES

* USING A MODEL RVF BROOKFIELD VISCOMETER WITH A NO. 6 SPINDLE, AT 20 RPM.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN J. Holake DATE 2 APR 64 CHECKED Ed Foster 6 APR 64 APPROVAL J. Holake 6 APR 64 APPROVAL J. Holake 7 APR 64		ADHESIVE	
SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		CODE IDENT NO.	NASA DRAWING NO.
FINAL FINISH NONE		C	1016224
APPLICATION		SCALE NONE	WT SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- C. EACH SHIPPING AND UNIT CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS, LOT NUMBER, DATE OF MANUFACTURE, AND EXPIRATION DATE FOR MATERIAL IN UNOPENED CONTAINERS.

2. ACCEPTANCE AND INSPECTION:

- A. MATERIAL - THE MATERIAL SHALL BE A ONE PART THERMOPLASTIC ADHESIVE WITH A SOLIDS CONTENT OF PIGMENT REINFORCED SYNTHETIC RUBBER AND SYNTHETIC PLASTIC RESIN. THE PREDOMINANT SOLVENT SHALL BE METHYL ETHYL KETONE.
- B. PROPERTIES - THE MATERIAL SHALL COMPLY WITH THE REQUIREMENTS SPECIFIED IN TABLE I.

3. DESIGN REQUIREMENTS:

- A. SHELF LIFE - THE MATERIAL SHALL HAVE A MINIMUM USABLE SHELF LIFE OF 6 MONTHS WHEN RECEIVED BY THE PURCHASER AND STORED BELOW 80°F IN UN-OPENED CONTAINERS.
- B. FLASH POINT - 16.5° TO 25°F WHEN TESTED IN ACCORDANCE WITH ASTM D 56.
- C. BOND STRENGTH - 1200 PSI MINIMUM, WHEN TESTED IN ACCORDANCE WITH ASTM D 1002. PREPARATION OF TEST SPECIMENS SHALL BE AS FOLLOWS:
- (1) PREPARE TWO .064 ± .005" X 4" X 6" COLD ROLLED STEEL PANELS.
 - (2) IF OXIDE, SCALE OR RUST IS PRESENT, SAND, SAND BLAST, WIRE BRUSH OR BUFF TO REMOVE.
 - (3) DEGREASE SURFACES OF THE PANELS BY ALKALINE CLEANING, VAPOR DEGREASING, SOLVENT WIPING OR SOLVENT DEGREASING.
 - (4) RINSE IN 150° TO 212°F WATER.
 - (5) TEST SURFACE WITH WATER FILM. THE WATER SHALL FLOW OFF THE PANELS IN A CONTINUOUS BREAK FREE FILM.
 - (6) DRY THE PANELS IN AN OVEN OR IN A HOT AIR STREAM.
 - (7) BRUSH A UNIFORM FILM OF THE UNDILUTED MATERIAL ON THE SURFACE OF EACH PANEL EXTENDING ACROSS THE 6" DIMENSION FROM THE EDGE INWARD A MINIMUM OF 3/4 INCH AND OF SUFFICIENT THICKNESS TO FORM A CURED GLUE LINE 1/2 TO 1-1/2 MILS THICK.
 - (8) ALLOW THE ADHESIVE TO DRY TO A TACK FREE CONDITION.
 - (9) PLACE THE PANELS, ADHESIVE SIDE UP, ON A METAL SURFACE MAINTAINED AT 350° ± 10°F FOR 2.0 ± 0.1 MINUTES.
 - (10) ASSEMBLE PANELS BY PLACING THE COATED FACES TOGETHER AND MAINTAIN A 0.5 ± 0.05 - 00 LAP AS SPECIFIED IN ASTM D 1002.
 - (11) CURE AT 350° ± 10°F AND 500 ± 20 PSI JOINT PRESSURE.
 - (12) CUT 5 TEST SPECIMENS FROM THE BONDED PANELS IN ACCORDANCE WITH ASTM D 1002.

D. INTENDED USE: THIS MATERIAL IS INTENDED TO BE USED AS AN ADHESIVE FOR JOINING METALS AND NON-METALLIC MATERIALS TO EACH OTHER OR IN COMBINATIONS.

PROCURE ONLY FROM APPROVED SOURCES LISTED IN ND 1002034 FOR THIS DRAWING.

1016224

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
(M) A	CHANGE IN ACCORDANCE WITH D.O.-45516	17-APR-64	J.B. EF
(M) B	REVISED AND UPGRADED FOR CLASS A RELEASE PER TDRR-15388	18-JAN-65	B. PF

TABLE I

PROPERTY	TEST METHOD	REQUIREMENTS
COLOR	VISUAL	TAN
WEIGHT PER GALLON	ASTM D 1875	7.4 ± 0.1 LB.
PERCENT SOLIDS	ASTM D 553	30 ± 1%
VISCOSITY AT 78°F	ASTM D 1824*	2250 TO 4250 CENTIPOISES

* USING A MODEL RVF BROOKFIELD VISCOMETER WITH A NO. 6 SPINDLE, AT 20 RPM.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>J. Holaki</i> DATE <i>2 APR 64</i> CHECKED <i>Ed Foster</i> 6 APR 64 APPROVAL <i>Ed Foster</i> 6 APR 64 APPROVAL <i>V. Giedeman</i> 7/4/64		ADHESIVE	
SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		NASA APPROVAL <i>C. M. H. S. 1/1/64</i>	CODE IDENT NO. SIZE C 1016224
FINAL FINISH NONE		MIT APPROVAL <i>W. R. H. 12 May 64</i>	NASA DRAWING NO. 1016224
APPLICATION		SCALE NONE WT	SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
- SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND 1015404, CLASS 3.
- EACH SHIPPING CONTAINER SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER.

2. ACCEPTANCE AND INSPECTION:

- MATERIAL:** ALL WIRE USED SHALL BE DRAWN FROM HIGH-GRADE COMMERCIALLY PURE COPPER WIRE BARS, ANNEALED AND COATED UNIFORMLY WITH A SMOOTH, CONTINUOUS ADHERENT LAYER OF COMMERCIALLY PURE TIN. INDIVIDUAL WIRES ENTERING INTO THE CONSTRUCTION OF THE BRAID SHALL BE TO SIZE AND SHALL BE UNIFORM IN SECTION. ALL WIRE SHALL BE COMMERCIALLY FREE FROM LUMPS, KINKS, SPLITS, ABRASIVES, SCRAPPED OR CORRODED SURFACES AND SKIN IMPURITIES.
- CONSTRUCTION:** THE BRAID SHALL BE WOVEN TO MEET THE FOLLOWING REQUIREMENTS.

TABLE I

NOMINAL FLAT WIDTH IN.	NOMINAL ROLLED THICKNESS INCH	NUMBER OF CARRIERS	NUMBER OF ENDS	AWG WIRE SIZE
1.0	.045	48	832	36

FLATTENING: THE FINISHED BRAID SHALL BE ROLLED FLAT TO MEET THE THICKNESS REQUIREMENTS OF TABLE I.

3. DESIGN REQUIREMENTS:

- INTENDED USE:** THIS BRAID IS INTENDED FOR USE AS A GROUNDING STRAP.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

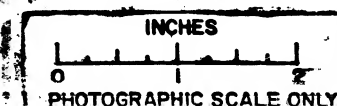
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REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 115 86 DATE 8/13/64

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS CONTRACT NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <u>Bender</u> 18 JUN 64 CHECKED <u>W. Diehl</u> 18 JUN 64 APPROVAL <u>M. Charleston</u> 26 JUN 64 APPROVAL <u>J. H. 28</u> 18 JUN 64		BRAID, WIRE- TINNED COPPER, TUBULAR, SHIELDING, FLATTEN SPECIFICATION CONTROL DRAWING	
NASA APPROVAL <u>W. J. Rhine</u> 28 JUN 64 MIT APPROVAL <u>W. J. Rhine</u> 13 JUN 64		CODE IDENT NO. C	NASA DRAWING NO. 1016228
HEAT TREATMENT NONE		SCALE NONE	WT
FINAL FINISH NONE		SHEET 1 OF 1	
NEXT ASSY	USED ON	APPLICATION	



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL, ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN NASA SPECIFICATION ND 1015404, CLASS 3, EXCEPT PARAGRAPH 3.4.1.2.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL:

- DIMENSIONS: FIGURE 2 AND 3
- MARKING: SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE FOLLOWING:
NASA PART NUMBER, DASH NUMBER AND REVISION LETTER.
SUPPLIER NAME OR SYMBOL
SUPPLIER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.
"RESET" SHALL BE MARKED ON THE PUSH BUTTON

B. ELECTRICAL:

- TRIP CALIBRATION: SEE FIGURE 1.

3. DESIGN:

- ADJUSTABILITY: SEE FIGURE 4.
- TRIP INDICATOR: UPON TRIPPING THE "RESET" BUTTON SHALL PROJECT APPROXIMATELY 3/16 INCH.
- TERMINALS: ALL TERMINALS SHALL BE PRESSURE CONNECTORS.
- HEATER COIL RATINGS: SEE TABLE 1.
- CONTACT RATINGS: SHALL HANDLE CURRENT REQUIRED FOR NEMA SIZE 0, 1, 2, 3, OR 4 CONTACT COILS, 600 VOLTS MAXIMUM.
- HEATER COIL: SEE TABLE 2

TABLE 2

NASA PART NUMBER	MANUFACTURER'S PART NUMBER	OPEN COIL RATING
1016235-101	10177H-1023	2.0 AMPS
1016235-102	10177H-1010	.5 AMPS
1016235-103	10177H-1024	—
1016235-104	10177H-1011	—

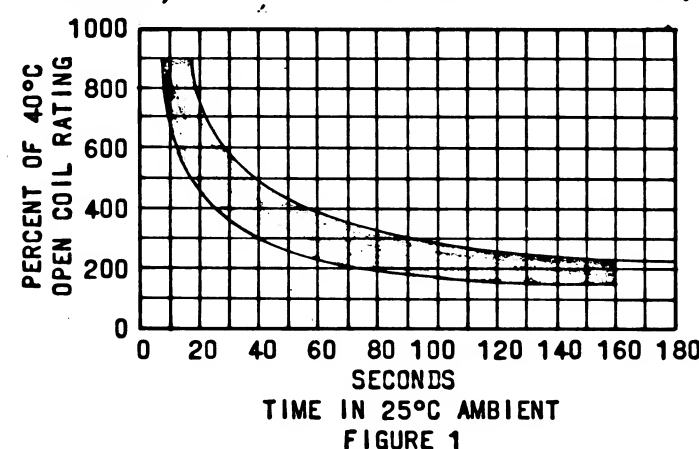
TABLE 1

NASA PART NUMBER	CUTLER HAMMER PART NUMBER	FIGURE NUMBER	NUMBER OF HEATER COILS	PUSH BUTTON OPERATOR	HEATER COIL DASH NUMBER
	(FOR REF)				(SEE TABLE 2)
1016235-001	10176ED65	3	1	"RESET"	-101
1016235-002	10176ED66	2	3	"RESET"	-102
1016235-003	10176ED65	3	1	"RESET"	-103
1016235-004	10176ED66	2	3	"RESET"	-104

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

RANGE OF TRIPPING TIMES FOR STANDARD TRIP COILS.

ON A NORMAL OVERLOAD, THE RELAY MAY BE RESET IN A FEW SECONDS AFTER TRIPPING--ON ABNORMAL OVERLOADS, DELAY RESETTING FOR A FEW MINUTES.



FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04637

DATE 11/19/63

B	—
A	—
SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. CONTRACT 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>J. Parks</i> DATE 18 OCT 63 CHECKED <i>C. Watson</i> 22 OCT 63 APPROVAL <i>BERGENTHAL</i> 18 OCT 63 APPROVAL <i>L. Friedman</i> 11/19/63		RELAY - OVERLOAD	
NASA APPROVAL <i>K. M. L.</i> 11/19/63 MIT APPROVAL <i>L. H. L.</i> 11/19/63		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		CODE IDENT NO. SIZE C	
FINAL FINISH NONE		NASA DRAWING NO. 1016235	
APPLICATION		SCALE NONE WT SHEET 1 OF 2	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OMISSION, WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSEING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN NASA SPECIFICATION ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL:

- DIMENSIONS: FIGURE 2 AND 3
- MARKING: SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE FOLLOWING:

NASA PART NUMBER, DASH NUMBER AND REVISION LETTER.

SUPPLIER NAME OR SYMBOL

SUPPLIER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

"RESET" SHALL BE MARKED ON THE PUSH BUTTON

B. ELECTRICAL:

- TRIP CALIBRATION: SEE FIGURE 1.

3. DESIGN:

- ADJUSTABILITY: SEE FIGURE 4.
- TRIP INDICATOR: UPON TRIPPING THE "RESET" BUTTON SHALL PROJECT APPROXIMATELY 3/16 INCH.
- TERMINALS: ALL TERMINALS SHALL BE PRESSURE CONNECTORS.
- HEATER COIL RATINGS: SEE TABLE 1.
- CONTACT RATINGS: SHALL HANDLE CURRENT REQUIRED FOR NEMA SIZE 0, 1, 2, 3, OR 4 CONTACT COILS, 600 VOLTS MAXIMUM.
- HEATER COIL: SEE TABLE 2

TABLE 2

NASA PART NUMBER	MANUFACTURER'S PART NUMBER	OPEN COIL RATING
1016235-101	10177H-1023	2.0 AMPS
1016235-102	10177H-1010	.5 AMPS

TABLE 1

NASA PART NUMBER	CUTLER HAMMER PART NUMBER (FOR REF)	FIGURE NUMBER	NUMBER OF HEATER COILS	PUSH BUTTON OPERATOR	HEATER COIL DASH NUMBER (SEE TABLE 2)
1016235-001	10176H67	3	1	"RESET"	-101
1016235-002	10176H71T	2	3	"RESET"	-102

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

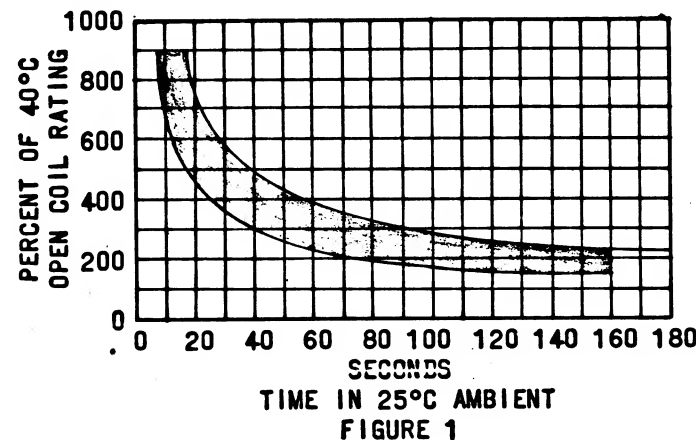
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REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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RANGE OF TRIPPING TIMES FOR STANDARD TRIP COILS.

ON A NORMAL OVERLOAD, THE RELAY MAY BE RESET IN A FEW SECONDS AFTER TRIPPING--ON ABNORMAL OVERLOADS, DELAY RESETTING FOR A FEW MINUTES.



FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 0437 DATE 11/19/63

SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. CONTRACT 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>J. Parks</i> DATE 18 OCT 63 CHECKED <i>C. Wilson</i> 22 OCT 63		RELAY - OVERLOAD	
APPROVAL <i>BERGENTHAL</i> 18 OCT 63 APPROVAL <i>L. J. Gorman</i> 11/15/63		SPECIFICATION CONTROL DRAWING	
NASA APPROVAL <i>B. Michael</i> 11/15/63		CODE IDENT NO.	SIZE
MIT APPROVAL <i>L. H. Gorman</i> 11/15/63		C	1016235
SCALE NONE		WT	SHEET 1 OF 2

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY "IMPLICATION OR OTHERWISE" AS IN ANY MANNER LICENSING THE USER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHT OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

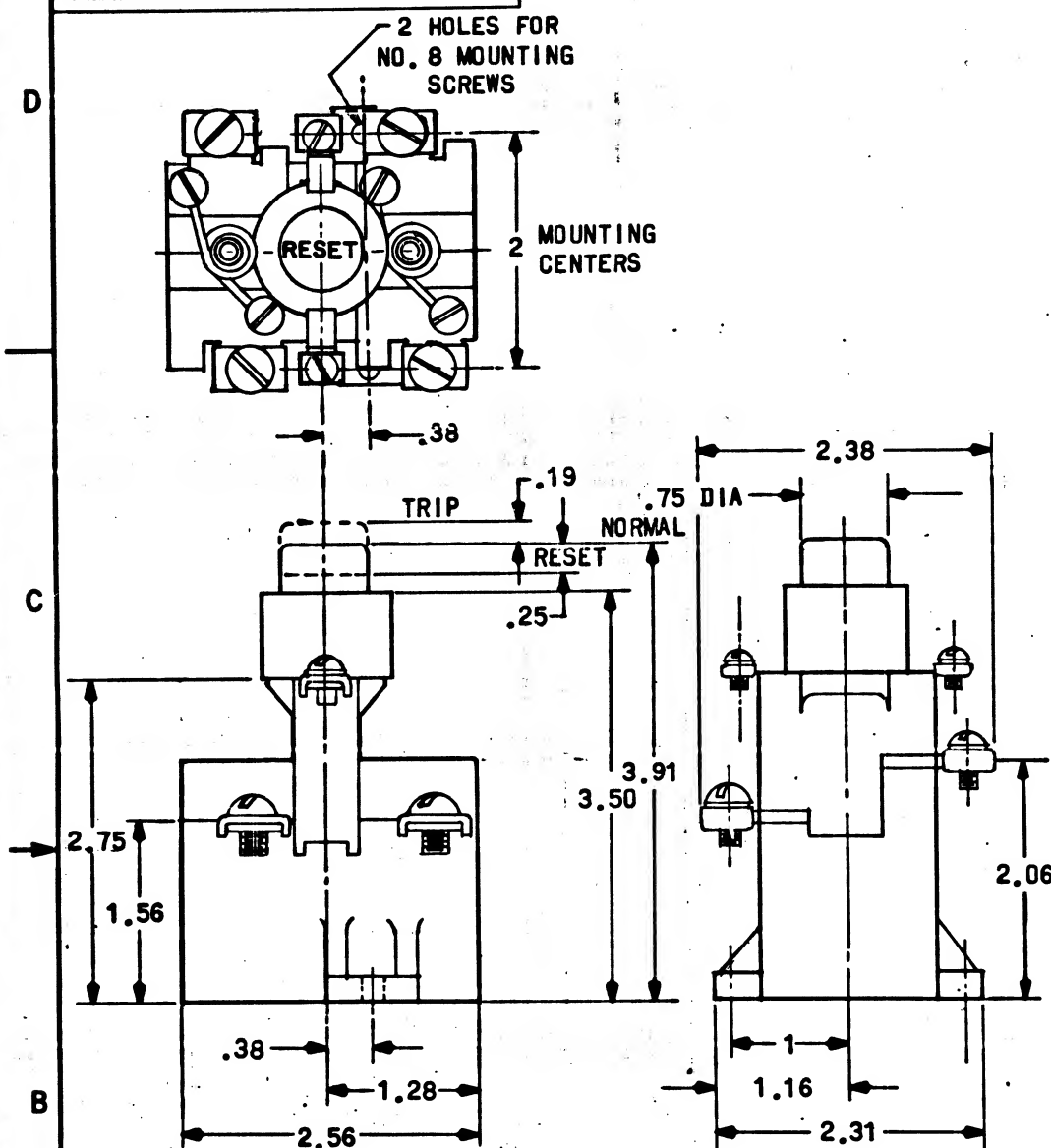


FIGURE 2

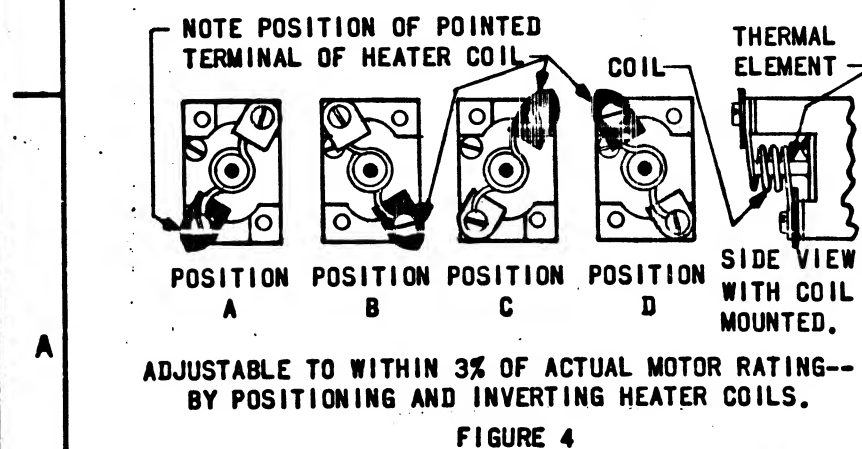


FIGURE 4

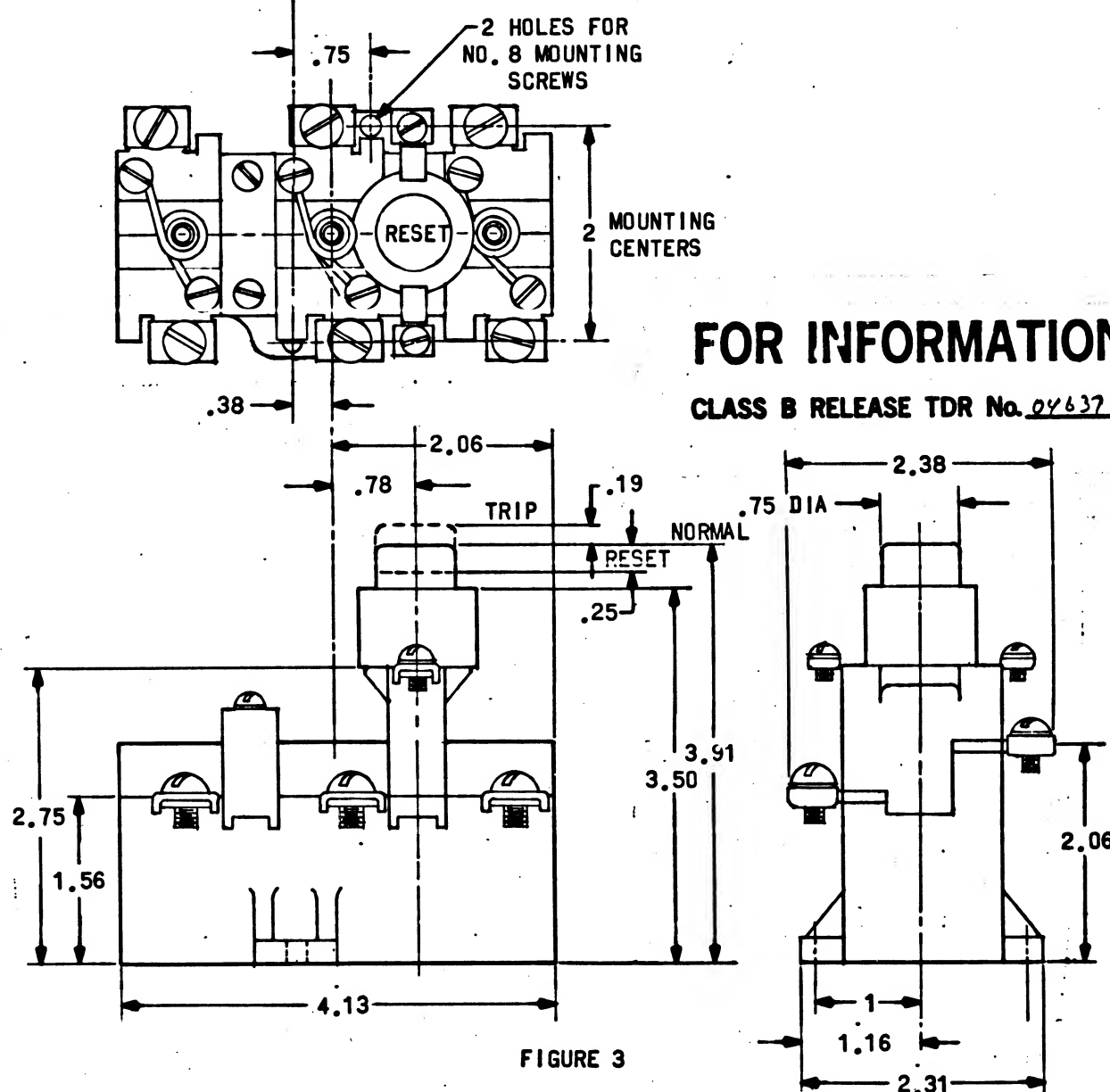
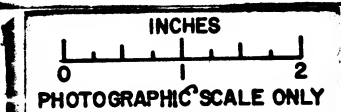


FIGURE 3

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04637 DATE 11/19/63

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. NAS DWS. NO. CONTRACT 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>J. Parks</i> DATE 18 OCT 63 CHECKED <i>C. Wilson</i> 18 OCT 63		RELAY - OVERLOAD	
APPROVAL <i>Beauchamp</i> 18 OCT 63 APPROVAL <i>Gedman</i> 11/15/63		SPECIFICATION CONTROL DRAWING	
NASA APPROVAL <i>W. L. L. 11/15/63</i>		CODE IDENT NO. SIZE	NASA DRAWING NO.
MIT APPROVAL <i>W. L. L. 11/15/63</i>		C	1016235
SCALE		WT	SHEET 2 OF 2



NOTICE - WHEN GOVERNMENT DRAWINGS SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATION AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- MARKING: THE FOLLOWING SHALL BE PERMANENTLY AND LEGIBLY MARKED ON PART:
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
MANUFACTURER'S NAME OR TRADEMARK.
VOLTAGE RATING AND CURRENT RATING.

3. DESIGN REQUIREMENTS:

A. ENVIRONMENTAL REQUIREMENTS: (PER MIL-STD-202)

(1) NON-OPERATING:

TEMPERATURE: -37°C TO +71°C
ALTITUDE: 40,000 FEET
HUMIDITY: 95%, 5 CYCLES

(2) OPERATING:

TEMPERATURE: +10°C TO +38°C
ALTITUDE: 0 - 6000 FEET
SHOCK: 20 "G" 11 MILLISECONDS
VIBRATION: 5 "G", 5 - 500 CPS
SALT SPRAY: 20% SOLUTION, 50 HOURS

B. MATERIAL AND FINISH

- BODY: CERAMIC OR FIBER
- FERRULES: BRASS, FINISH OR NICKEL PLATED, SILVER PLATED OR BRIGHT ALLOY PLATING.

C. SILVER PLATED INDICATING PIN EXTENDS FROM END OF FUSE WHEN FUSE IS BLOWN.

D. ELECTRICAL REQUIREMENTS:

- VOLTAGE RATING: 125 V
- BLOW TIME CHARACTERISTICS: PER TABLE I
- CURRENT RATING: SEE TABLE II

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

TABLE I

PERCENT OF RATING	BLOW TIME
110%	4 HOUR (MINIMUM)
135%	1 HOUR (MAXIMUM)
200%	30 SECONDS (MAXIMUM)

TABLE II

PART NUMBER	CURRENT RATING (AMPS)	MANUFACTURER'S PART NUMBER	
		LITTELFUSE	BUSSMANN
1016236-1	.75	334,750	GLD .75
-2	.80	334,800	-
-3	1	334001	GLD 1
-4	2	334002	GLD 2
-5	3	334003	GLD 3

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04436 DATE 11/16/63

Ⓐ REPLACED WITH CHANGE BY REV "B"

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS CONTRACT NAS9-497 DRAWN <u>BENDER</u> 28 OCT 63 CHECKED <u>Ed Foster</u> 29 OCT 63 APPROVAL <u>G. W. Foster</u> 29 OCT 63 APPROVAL <u>L. Goldman</u> 11/15/63		MANNED SPACECRAFT CENTER HOUSTON, TEXAS FUSE, INDICATING, 1/4" DIAMETER X 1-1/4" LONG SPECIFICATION CONTROL DRAWING	
NEXT ASSY		USED ON	APPLICATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ± DO NOT SCALE THIS DRAWING MATERIAL SEE REQUIREMENTS HEAT TREATMENT NONE FINAL FINISH NONE		NASA APPROVAL <u>[Signature]</u> MIT APPROVAL <u>[Signature]</u>	CODE IDENT NO. SIZE C 1016236 SCALE NONE WT SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLD OR AT Y OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- A. INTERPRET DRAWING SYMBOLS, ABBREVIATION AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- (1) MARKING: THE FOLLOWING SHALL BE PERMANENTLY AND LEGIBLY MARKED ON PART:
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
MANUFACTURER'S NAME OR TRADEMARK.
VOLTAGE RATING AND CURRENT RATING.

3. DESIGN REQUIREMENTS:

A. ENVIRONMENTAL REQUIREMENTS: (PER MIL-STD-202)

(1) NON-OPERATING:

TEMPERATURE: -37°C TO +71°C
ALTITUDE: 40,000 FEET
HUMIDITY: 95%, 5 CYCLES

(2) OPERATING:

TEMPERATURE: +10°C TO +38°C
ALTITUDE: 0 - 6000 FEET
SHOCK: 20 "G" 11 MILLISECONDS
VIBRATION: 5 "G", 5 - 500 CPS
SALT SPRAY: 20% SOLUTION, 50 HOURS

B. MATERIAL AND FINISH

- (1) BODY: CERAMIC OR FIBER
- (2) FERRULES: BRASS, FINISH OR NICKEL PLATED, SILVER PLATED OR BRIGHT ALLOY PLATING.

C. SILVER PLATED INDICATING PIN EXTENDS FROM END OF FUSE WHEN FUSE IS BLOWN.

D. ELECTRICAL REQUIREMENTS:

- (1) VOLTAGE RATING: 125 V
- (2) BLOW TIME CHARACTERISTICS: PER TABLE I
- (3) CURRENT RATING: SEE TABLE II

TABLE I

PERCENT OF RATING	BLOW TIME
110%	4 HOUR (MINIMUM)
135%	1 HOUR (MAXIMUM)
200%	30 SECONDS (MAXIMUM)

TABLE II

PART NUMBER	CURRENT RATING (AMPS)	MANUFACTURER'S PART NUMBER	
		LITTELFUSE	BUSSMANN
1016236-1	.75	334,750	GLD .75
-2	.80	334,800	-
-3	1	334001	GLD 1
-4	2	334002	GLD 2
-5	3	334003	GLD 3

FOR INFORMATION ONLY

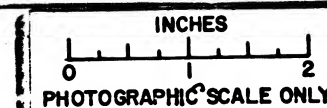
CLASS B RELEASE TDR No. 04436 DATE 11/1/63

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

MASTER

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		
TOLERANCES ON		
FRACTIONS	DECIMALS	ANGLES
±	±	±
DO NOT SCALE THIS DRAWING		
MATERIAL		
SEE REQUIREMENTS		
HEAT TREATMENT		
NONE		
FINAL FINISH		
NONE		
NEXT ASSY	USED ON	APPLICATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS DWC NO. CONTRACT 497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN BENDER 28 OCT 63 CHECKED Ed Foster 29 OCT 63 APPROVAL G. W. Walker 29 Oct 63 APPROVAL L. Goldman 11/5/63		FUSE, INDICATING, 1/4" DIAMETER X 1-1/4" LONG SPECIFICATION CONTROL DRAWING	
NASA APPROVAL [Signature] MIT APPROVAL [Signature]		CODE IDENT NO. SIZE C	NASA DRAWING NO. 1016236
SCALE NONE		WT	SHEET 1 OF 1



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

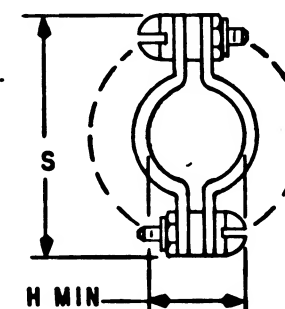
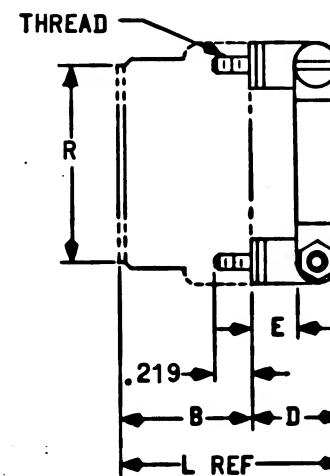
REQUIREMENTS:

1. GENERAL:
 - A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS, AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
 - B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN NASA DOCUMENT ND 1015404, CLASS 3.
 - C. UNITS SHALL BE CAPABLE OF MEETING ALL QUALIFICATION REQUIREMENTS SPECIFIED IN ND 1002502.
2. INSPECTION AND ACCEPTANCE:
 - A. MECHANICAL REQUIREMENTS:
 - (1) MATERIAL:
 - (a) CLAMPS AND PINS: STAINLESS STEEL PASSIVATED.
 - (b) CLINCH NUT AND SCREW: STEEL, CADMIUM PLATED.
 - (2) DIMENSIONS: PER DRAWING
 - (3) MARKING: UNITS SHALL BE MARKED IN ACCORDANCE WITH MIL-STD-130 WITH MANUFACTURER'S NAME OR SYMBOL, NASA DRAWING NUMBER. THE MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.
3. DESIGN REQUIREMENTS:
 - A. FOR USE ON MS3106R SERIES CONNECTORS AS A MECHANICAL CABLE STRAIN RELIEF.

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04637 DATE 11/19/65

NASA PART NUMBER	MANUFACTURER'S IDENTIFICATION	SHELL SIZE	B	D	E	H	J	L	R	S
1016237-101	CA45159	10S	.73	.47	.19	.22	4-40	1.23	.72	1.00
-120	CA45159	12S	.77					1.27		
-121	CA45159	12	.92					1.42		
-140	CA45160	14S	.73			.31		1.23	.89	1.19
-141	CA45160	14	.91			.31		1.41	.89	1.19
-160	CA45161	16S	.73			.44		1.23	1.00	1.31
-161	CA45161	16	.91			.44		1.41	1.00	1.31
-180	CA45162	18	1.02	.56	.25	.56	6-32	1.58	1.17	1.48
-200	CA45163	20	1.03			.62		1.59	1.31	1.62
-220	CA45163	22	1.03					1.56	1.31	1.62
-240	CA45166	24	.95					1.52	1.53	1.91
-280	CA45166	28	.95					1.52	1.53	1.91
-320	CA45167	32	.89	.80	.41	.75	8-32	1.70	1.86	2.22
-360	CA45168	36	.89	.80	.41	.94	8-32	1.70	2.05	2.47



PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± .005 ± .02 DO NOT SCALE THIS DRAWING MATERIAL SEE REQUIREMENTS HEAT TREATMENT NONE FINAL FINISH NONE	
NEXT ASSY	USED ON
APPLICATION	

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIG NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>D. Robert</i> DATE <i>9/10/63</i> CHECKED <i>Ed Foster</i> 4 Nov 63 APPROVAL <i>L. J. Gorman</i> 4 Nov 63		CLAMP - STRAIN RELIEF (FOR MS3106R)	
NASA APPROVAL <i>W. H. Smith</i> 9/14/63		CODE IDENT NO.	NASA DRAWING NO.
MIT APPROVAL <i>L. H. Haffner</i> 11/14/65		C	1016237
SCALE NONE		WT	SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFERRING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:
 - A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS, AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
 - B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN NASA DOCUMENT ND 1015404, CLASS 3.
 - C. UNITS SHALL BE CAPABLE OF MEETING ALL QUALIFICATION REQUIREMENTS SPECIFIED IN ND 1002502.
2. INSPECTION AND ACCEPTANCE:
 - A. MECHANICAL REQUIREMENTS:
 - (1) MATERIAL:
 - (a) CLAMPS AND PINS: STAINLESS STEEL PASSIVATED.
 - (b) CLINCH NUT AND SCREW: STEEL, CADMIUM PLATED.
 - (2) DIMENSIONS: PER DRAWING
 - (3) MARKING: UNITS SHALL BE MARKED IN ACCORDANCE WITH MIL-STD-130 WITH MANUFACTURER'S NAME OR SYMBOL, NASA DRAWING NUMBER. THE MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.
3. DESIGN REQUIREMENTS:
 - A. FOR USE ON MS3106R SERIES CONNECTORS AS A MECHANICAL CABLE STRAIN RELIEF.

NASA PART NUMBER	MANUFACTURER'S IDENTIFICATION	SHELL SIZE	B	D	E	H	J	L	R	S
1016237-101	CA45159	10S	.73	.47	.19	.22	4-40	1.23	.72	1.00
-120	CA45159	12S	.77					1.27		
-121	CA45159	12	.92					1.42		
-140	CA45160	14S	.73			.31		1.23	.89	1.19
-141	CA45160	14	.91			.31		1.41	.89	1.19
-160	CA45161	16S	.73			.44		1.23	1.00	1.31
-161	CA45161	16	.91			.44		1.41	1.00	1.31
-180	CA45162	18	1.02	.56	.25	.56	6-32	1.58	1.17	1.48
-200	CA45163	20	1.03			.62		1.59	1.31	1.62
-220	CA45163	22	1.03					1.56	1.31	1.62
-240	CA45166	24	.95					1.52	1.53	1.9
-280	CA45166	28	.95					1.52	1.53	1.91
-320	CA45167	32	.89	.80	.41	.75	8-32	1.70	1.86	2.22
-360	CA45168	36	.89	.80	.41	.94	8-32	1.70	2.05	2.47

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± .005 ±
± .02
DO NOT SCALE THIS DRAWING
MATERIAL
SEE REQUIREMENTS
HEAT TREATMENT
NONE
FINAL FINISH
NONE

NEXT ASSY USED ON APPLICATION

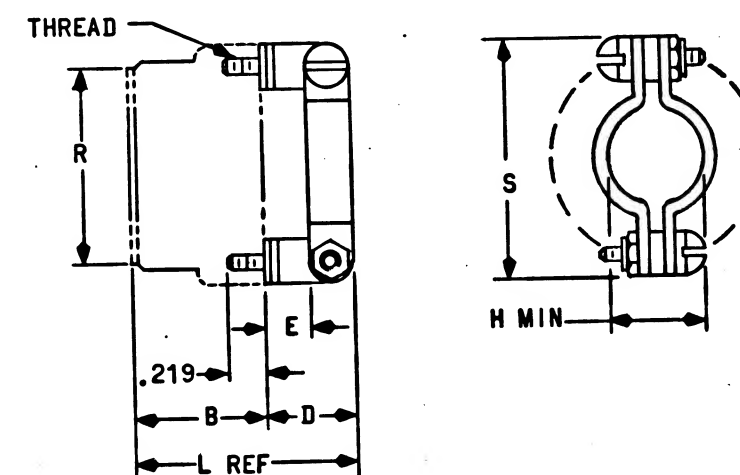
MIT INSTRUMENTATION LAB
CAMBRIDGE, MASS
CONTRACT NAS 9-497
DRAWN *D. Doherty* DATE 31 OCT 63
CHECKED *Ed Foster* 4 Nov 63
APPROVAL *J. Lewis* 4 Nov 63
APPROVAL *L. Friedman* 11/15/63
NASA APPROVAL *W. H. ...* 11/15/63
MIT APPROVAL *L. H. ...* 11/14/63

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

CLAMP - STRAIN RELIEF
(FOR MS3106R)

SPECIFICATION CONTROL DRAWING

CODE IDENT NO. SIZE NASA DRAWING NO.
C 1016237
SCALE NONE WT SHEET 1 OF 1



REPLACED WITH CHANGE BY REV C

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS CONTRACT NAS 9-497			
MANNED SPACECRAFT CENTER HOUSTON, TEXAS			
CLAMP - STRAIN RELIEF (FOR MS3106R)			
SPECIFICATION CONTROL DRAWING			
CODE IDENT NO.	SIZE	NASA DRAWING NO.	
C	C	1016237	
SCALE NONE	WT	SHEET 1 OF 1	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY APPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE CONSIDERED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS, AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN NASA DOCUMENT ND 1015404, CLASS 3.
- UNITS SHALL BE CAPABLE OF MEETING ALL QUALIFICATION REQUIREMENTS SPECIFIED IN ND 1002502.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

(a) CLAMPS AND PINS: ALUMINUM ALLOY

(b) CLINCH NUT AND SCREW: STEEL, CADMIUM PLATED,

(2) DIMENSIONS: PER DRAWING

(3) MARKING: UNITS SHALL BE MARKED IN ACCORDANCE WITH MIL-STD-130 WITH MANUFACTURER'S NAME OR SYMBOL, NASA DRAWING NUMBER. THE MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

3. DESIGN REQUIREMENTS:

- FOR USE ON MS3106R SERIES CONNECTORS AS A MECHANICAL CABLE STRAIN RELIEF.

NASA PART NUMBER	MANUFACTURER'S IDENTIFICATION	SHELL SIZE	B	D	E	H	J	L	R	S
1016237-101	CA45159	103	.73	.47	.19	.22	4-40	1.23	.72	1.00
-120	CA45159	123	.77					1.27		
-121	CA45159	12	.92					1.42		
-140	CA45160	143	.73			.31		1.23	.89	1.19
-141	CA45160	14	.91			.31		1.41	.89	1.19
-160	CA45161	165	.73			.44		1.23	1.00	1.31
-161	CA45161	16	.91			.44		1.41	1.00	1.31
-180	CA45162	18	1.02	.56	.25	.56	6-32	1.58	1.17	1.48
-200	CA45163	20	1.03			.62		1.59	1.31	1.62
-220	CA45164	22	1.00					1.56	1.31	1.62
-240	CA45165	24	.95					1.52	1.53	1.91
-280	CA45166	28	.95					1.52	1.53	1.98
-320	CA45167	32	.89	.80	.41	.75	8-32	1.70	1.86	2.22
-360	CA45168	36	.89	.80	.41	.94	8-32	1.70	2.05	2.47

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

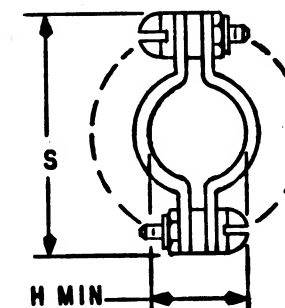
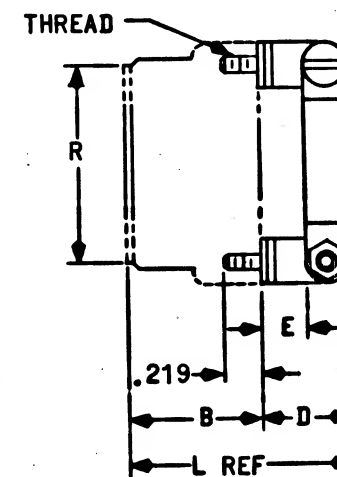
1016237

REVISIONS

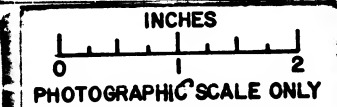
SYM	DESCRIPTION	DATE	APPROVAL
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FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04637 DATE 11/19/63



QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
		CLAMP - STRAIN RELIEF (FOR MS3106R)	
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>D. Robert</i> DATE <i>31 OCT 63</i> CHECKED <i>Ed Foster</i> 4 Nov 63 APPROVAL <i>L. Feldman</i> 11/15/63		SPECIFICATION CONTROL DRAWING	
NASA APPROVAL <i>W. H. ...</i> 11/14/63		CODE IDENT NO.	NASA DRAWING NO.
MIT APPROVAL <i>L. H. ...</i> 11/14/63		C	1016237
		SCALE NONE	WT
		SHEET 1 OF 1	



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:
 - A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
 - B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
 - C. PART MUST MEET REQUIREMENTS OF PS 1000135
 2. INSPECTION AND ACCEPTANCE:
 - A. MECHANICAL REQUIREMENTS:
 - (1) MATERIAL:
 - a. BODY: 303 CRES.
 - b. SPRING: 17-7 PH
 - c. RETAINER: 303 CRES.
 - d. GUIDE: 303 CRES.
 - e. O-RINGS: BUNA-N
 - (2) FINISH: PASSIVATE
 - (3) DIMENSIONS: AS SHOWN.
 - (4) MARKING:
 - a. PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME.
NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
SUPPLIER'S LOT OR SERIAL NUMBER.
DATE CODE, OR DATE OF MANUFACTURE.
 - b. MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.
3. DESIGN REQUIREMENTS: FOR USE WITH ETHYLENE GLYCOL WATER TEMPERATURE RANGE +20°F TO +120°F
4. APPLICATION DATA (FOR REFERENCE):
 - A. MATES WITH FEMALE DISC NASA PART NUMBER 1016019.
 - B. LOCKING TYPE: PUSH TO CONNECT, PULL TO DISCONNECT CAPABLE OF UNCOUPLING AND COUPLING AT 85 PSI
 - C. BURST PRESSURE: 300 PSI
 - D. PROOF PRESSURE: 170 PSI
 - E. OPERATING PRESSURE: 85 PSI

NASA PART NUMBER	SEATON WILSON NUMBER	
	END FITTING	PART NUMBER
1016238-001	MS33656-4 STYLE E MODIFIED	Z 602-4
1016238-002	MS33657-4 STYLE S	Z 602-4
1016238-003	MS33656-4 STYLE E	Z 602-4

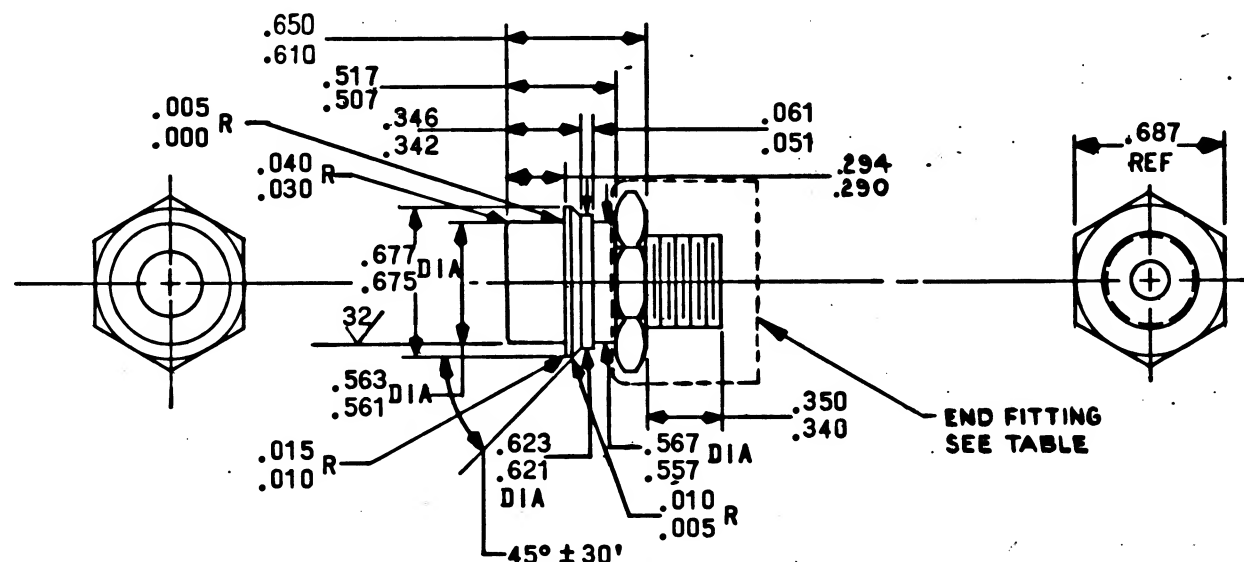
PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING.

B 1016238

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	CHANGE IN ACCORDANCE WITH MAX 192286 PER TDRR 7753	10 DEC 63	RM JHP
B	CHANGE IN ACCORDANCE WITH CM 195041 PER TDRR 7760	17 FEB 64	JHP CJP

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04677 DATE 11/19/63



QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS DWS 80 CONTRACT NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>D. Deibert</i> DATE 29 OCT 63 CHECKED <i>Ed Foster</i> 31 OCT 63 APPROVAL <i>C. Kampman</i> 21 OCT 63 APPROVAL <i>L. G. Johnson</i> 11/15/63		COUPLING HALF, QUICK DISCONNECT SPECIFICATION CONTROL DRAWING	
NASA APPROVAL <i>[Signature]</i> 11/14/63 MIT APPROVAL <i>[Signature]</i> 11/14/63		CODE IDENT NO. C	NASA DRAWING NO. 1016238
SCALE NONE		WT	SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
- PART MUST MEET REQUIREMENTS OF PS 1000135

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

- BODY: 303 CRES.
- SPRING: 17-7 PH
- RETAINER: 303 CRES.
- GUIDE: 303 CRES.
- O-RINGS: BUNA-N

(2) FINISH: PASSIVATE

(3) DIMENSIONS: AS SHOWN.

(4) MARKING:

- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME.
NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
SUPPLIER'S LOT OR SERIAL NUMBER.
DATE CODE, OR DATE OF MANUFACTURE.
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

3. DESIGN REQUIREMENTS: FOR USE WITH ETHYLENE GLYCOL WATER TEMPERATURE RANGE +20°F TO +120°F

4. APPLICATION DATA (FOR REFERENCE):

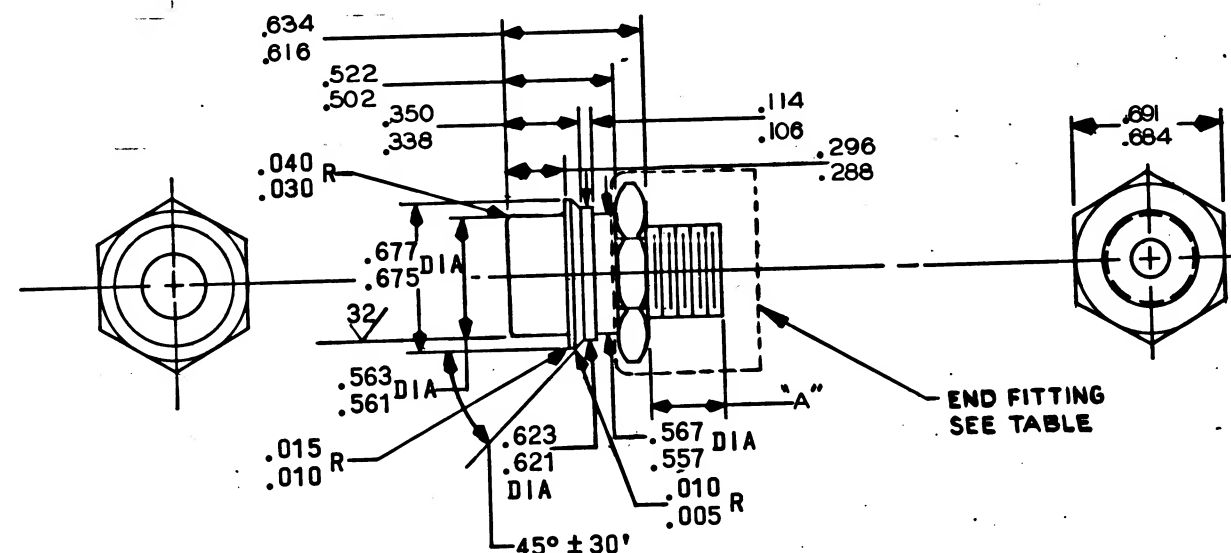
- MATES WITH FEMALE DISC NASA PART NUMBER 1016019.
- LOCKING TYPE: PUSH TO CONNECT, PULL TO DISCONNECT CAPABLE OF UNCOUPLING AND COUPLING AT 85 PSI
- BURST PRESSURE: 300 PSI
- PROOF PRESSURE: 170 PSI
- OPERATING PRESSURE: 85 PSI

NASA PART NUMBER	SEATON WILSON NUMBER	DIM. "A"
1016238-001	MS33656-4 STYLE E MODIFIED	Z 602-4 .360 .340
1016238-002	MS33657-4 STYLE S	Z 602-B4 1.142 1.078
1016238-003	MS33656-4 STYLE E	Z 602-T4 .565 .535

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

NOTE:

- ALL LONGITUDINAL DIMENSIONS EXCEPT DIMENSION "A" ARE WITH THE SNOOT DEPRESSED TO REMOVE A SMALL AMOUNT OF LONGITUDINAL PLAY.



FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04677 DATE 11/19/63

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>[Signature]</i> DATE 29 OCT 63 CHECKED <i>[Signature]</i> 31 OCT 63 APPROVAL <i>[Signature]</i> 21 OCT 63 APPROVAL <i>[Signature]</i> 11/15/63		COUPLING HALF, QUICK DISCONNECT SPECIFICATION CONTROL DRAWING	
NASA APPROVAL <i>[Signature]</i> 11/15/63		CODE IDENT NO. SIZE C	NASA DRAWING NO. 1016238
MIT APPROVAL <i>[Signature]</i> 11/14/63		SCALE NONE WT	SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONFERRING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

- a. BODY: 303 CRES.
b. SPRING: 17-7 PH
c. RETAINER: 303 CRES.
d. GUIDE: 303 CRES.
e. O-RINGS: BUNA-N

(2) FINISH: PASSIVATE

(3) DIMENSIONS: AS SHOWN.

(4) MARKING:

- a. PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION PER MIL-STD-129:

SUPPLIER'S NAME.

NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.

SUPPLIER'S LOT OR SERIAL NUMBER.

DATE CODE, OR DATE OF MANUFACTURE.

- b. MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

3. DESIGN REQUIREMENTS: FOR USE WITH ETHYLENE GLYCOL WATER TEMPERATURE RANGE +20°F TO +120°F

4. APPLICATION DATA (FOR REFERENCE):

- A. MATES WITH FEMALE DISC NASA PART NUMBER 1016019.
B. LOCKING TYPE: PUSH TO CONNECT, PULL TO DISCONNECT CAPABLE OF UNCOUPLING AND COUPLING AT 85 PSI
C. BURST PRESSURE: 300 PSI
D. PROOF PRESSURE: 170 PSI
E. OPERATING PRESSURE: 85 PSI

NASA PART NUMBER	SEATON WILSON NUMBER END FITTING	PART NUMBER	DIM. "A"
1016238-001	MS33656-4 STYLE E MODIFIED	Z 602-4	.360 .340
1016238-002	MS33657-4 STYLE S	Z 602-B4	1.142 1.078
1016238-003	MS33656-4 STYLE E	Z 602-T4	.565 .535

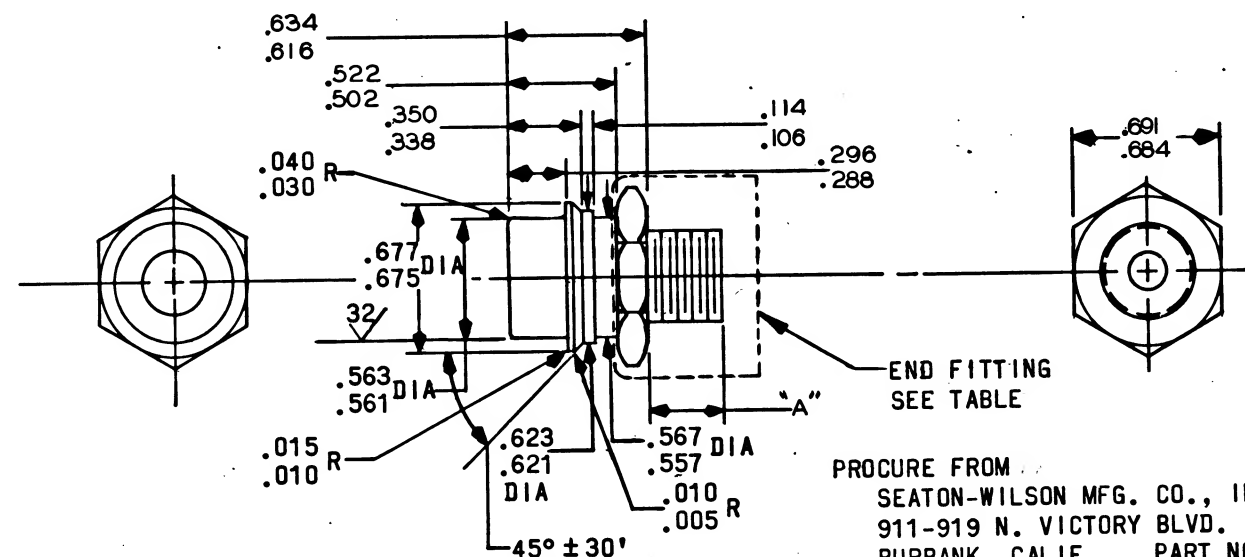
ONLY THE ITEMS LISTED ON THIS DRAWING AND IDENTIFIED BY SUPPLIER'S NAMES, ADDRESSES, AND PART NUMBER HAVE BEEN TESTED AND APPROVED BY AC SPARK PLUG FOR USE IN:

APOLLO GSE EQUIPMENT

A SUBSTITUTE ITEM SHALL NOT BE USED WITHOUT PRIOR TESTING AND APPROVAL BY AC SPARK PLUG

NOTE:

1. ALL LONGITUDINAL DIMENSIONS EXCEPT DIMENSION "A" ARE WITH THE SNOOT DEPRESSED TO REMOVE A SMALL AMOUNT OF LONGITUDINAL PLAY.



FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04677 DATE 11/19/63

PROCURE FROM
SEATON-WILSON MFG. CO., INC. (05477)
911-919 N. VICTORY BLVD.
BURBANK, CALIF. PART NO'S.—SEE TABLE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>[Signature]</i> DATE 22 OCT 63 CHECKED <i>[Signature]</i> 31 OCT 63 APPROVAL <i>[Signature]</i> 31 OCT 63 APPROVAL <i>[Signature]</i> 11/15/63		COUPLING HALF, QUICK DISCONNECT SOURCE CONTROL DRAWING	
NASA APPROVAL <i>[Signature]</i> 11/15/63		CODE IDENT NO. SIZE C	NASA DRAWING NO. 1016238
MIT APPROVAL <i>[Signature]</i> 11/15/63		SCALE NONE WT	SHEET 1 OF 1

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ±	DO NOT SCALE THIS DRAWING MATERIAL SEE REQUIREMENTS HEAT TREATMENT NONE FINAL FINISH NONE
NEXT ASSY	USED ON
APPLICATION	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

- a. BODY: 303 CRES.
b. SPRING: 17-7 PH
c. RETAINER: 303 CRES.
d. GUIDE: 303 CRES.
e. O-RINGS: BUNA-N

(2) FINISH: PASSIVATE

(3) DIMENSIONS: AS SHOWN.

(4) MARKING:

- a. PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION PER MIL-STD-129:
SUPPLIER'S NAME.
NASA DRAWING NUMBER, DASH NUMBER

SUPPLIER'S LOT OR SERIAL NUMBER.
DATE CODE, OR DATE OF MANUFACTURE.

- b. MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

3. DESIGN REQUIREMENTS: FOR USE WITH ETHYLENE GLYCOL WATER TEMPERATURE RANGE +20°F TO +120°F

4. APPLICATION DATA (FOR REFERENCE):

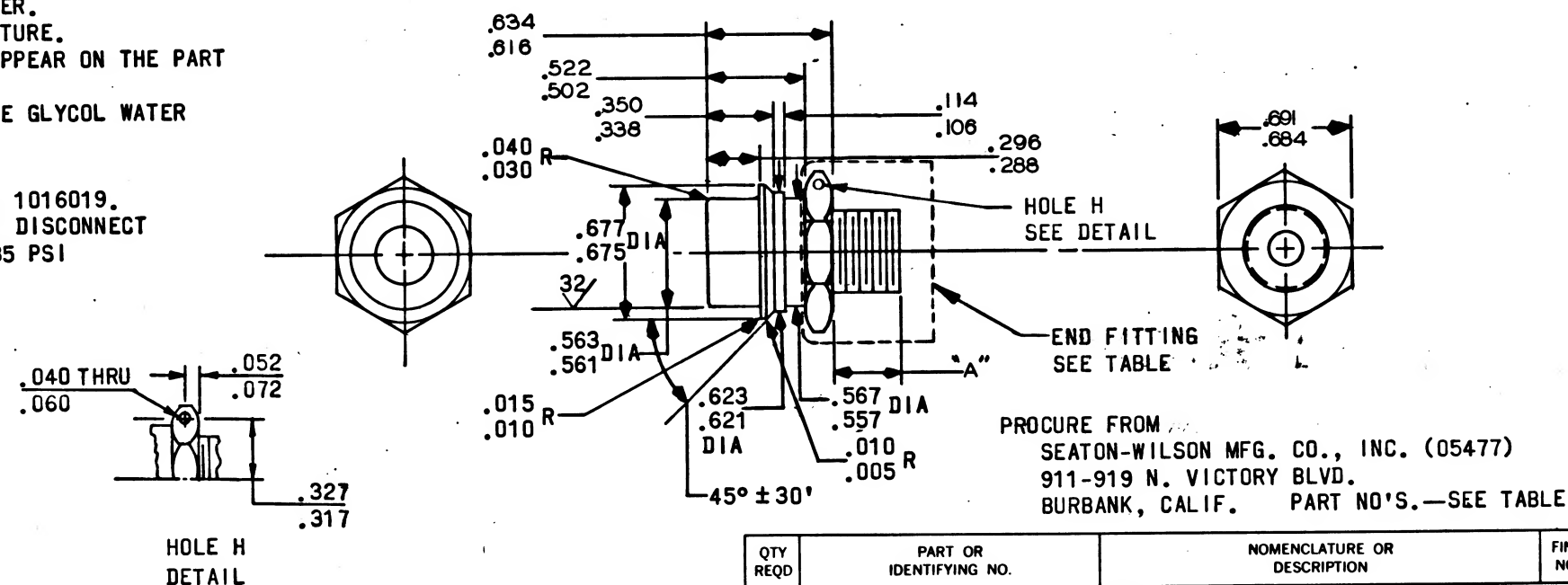
- A. MATES WITH FEMALE DISC NASA PART NUMBER 1016019.
B. LOCKING TYPE: PUSH TO CONNECT, PULL TO DISCONNECT CAPABLE OF UNCOUPLING AND COUPLING AT 85 PSI
C. BURST PRESSURE: 300 PSI
D. PROOF PRESSURE: 170 PSI
E. OPERATING PRESSURE: 85 PSI

NOTES:

1. ALL LONGITUDINAL DIMENSIONS EXCEPT DIMENSION "A" ARE WITH THE SNOUT DEPRESSED TO REMOVE A SMALL AMOUNT OF LONGITUDINAL PLAY.
2. DUST COVER TO BE SECURED TO COUPLING WITH LOCK-WIRE THROUGH "HOLE H." "HOLE H" SHALL BE OPTIONAL IN 1016238-001, -002, AND -003.

NASA DASH NUMBER	END FITTING	DUST COVER SEE NOTE 2	DIM "A"
-001	MS33656-4 STYLE E MODIFIED	NONE	.360 .340
-002	MS33657-4 STYLE S	NONE	1.142 1.078
-003	MS33656-4 STYLE E	NONE	.565 .535
-004	MS33657-4 STYLE S	1016342-001	1.142 1.078
-005	MS33656-4 STYLE E	1016342-001	.565 .535

THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.



ONLY THE ITEMS LISTED ON THIS DRAWING AND IDENTIFIED BY SUPPLIER'S NAMES, ADDRESSES, AND PART NUMBER HAVE BEEN TESTED AND APPROVED BY AC SPARK PLUG FOR USE IN:

APOLLO GSE EQUIPMENT

A SUBSTITUTE ITEM SHALL NOT BE USED WITHOUT PRIOR TESTING AND APPROVAL BY AC SPARK PLUG

PROCURE ONLY FROM APPROVED SOURCES LISTED ON CONTRACTORS ACCEPTABLE SUPPLIERS LIST.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ±		
DO NOT SCALE THIS DRAWING MATERIAL		
SEE REQUIREMENTS		
HEAT TREATMENT		
NONE		
FINAL FINISH		
NONE		
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>[Signature]</i> DATE 29 OCT 63		COUPLING HALF, QUICK DISCONNECT	
CHECKED <i>[Signature]</i> 31 OCT 63		SOURCE CONTROL DRAWING	
APPROVAL <i>[Signature]</i> 31 OCT 63		NASA DRAWING NO. 1016238	
NASA APPROVAL <i>[Signature]</i> 11/15/63		CODE IDENT NO. SIZE C	SCALE NONE WT
MIT APPROVAL <i>[Signature]</i> 11/15/63		SHEET 1 OF 1	

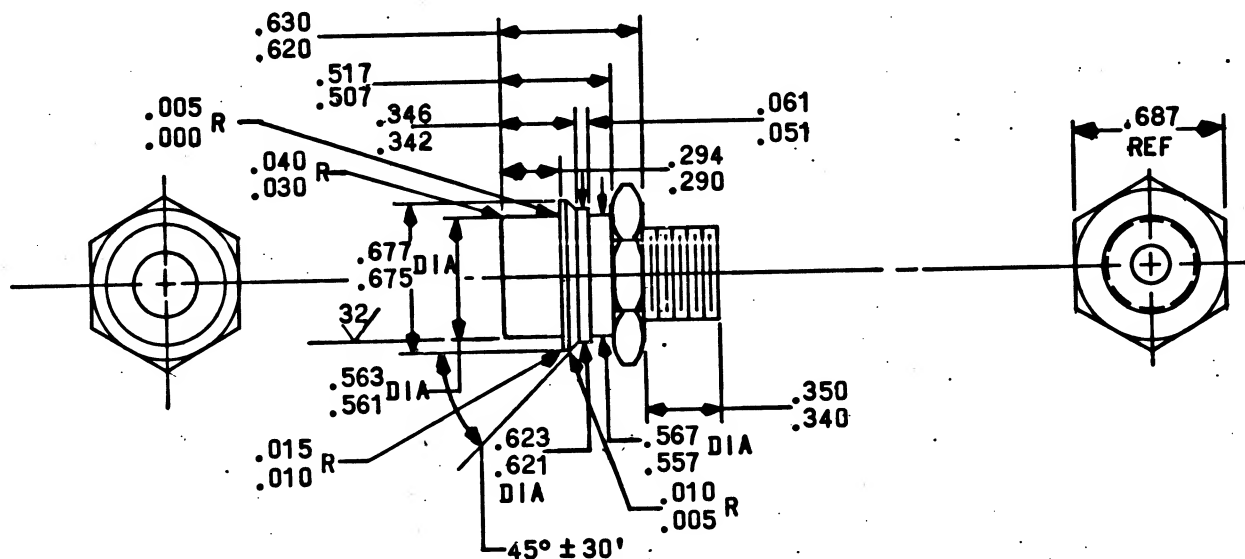
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REQUIREMENTS:

1. GENERAL:
 - A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
 - B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
 - C. PART MUST MEET REQUIREMENTS OF PS 1000135
2. INSPECTION AND ACCEPTANCE:
 - A. MECHANICAL REQUIREMENTS:
 - (1) MATERIAL:
 - a. BODY: 303 CRES.
 - b. SPRING: 17-7 PH
 - c. RETAINER: 303 CRES.
 - d. GUIDE: 303 CRES.
 - e. O-RINGS: BUNA-N
 - (2) FINISH: PASSIVATE
 - (3) DIMENSIONS: AS SHOWN.
 - (4) MARKING:
 - a. PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
 - SUPPLIER'S NAME.
 - NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
 - SUPPLIER'S LOT OR SERIAL NUMBER.
 - DATE CODE, OR DATE OF MANUFACTURE.
 - b. MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.
3. DESIGN REQUIREMENTS: FOR USE WITH ETHYLENE GLYCOL WATER TEMPERATURE RANGE +20°F TO +120°F
4. APPLICATION DATA (FOR REFERENCE):
 - A. MATES WITH FEMALE DISC NASA PART NUMBER 1016019.
 - B. LOCKING TYPE: PUSH TO CONNECT, PULL TO DISCONNECT CAPABLE OF UNCOUPLING AND COUPLING AT 85 PSI
 - C. BURST PRESSURE: 300 PSI
 - D. PROOF PRESSURE: 170 PSI
 - E. OPERATING PRESSURE: 85 PSI

NASA PART NUMBER	SEATON WILSON NUMBER	END FITTING	PART NUMBER
1016238-001	MS33656-4	STYLE E MODIFIED	Z 602-4
1016238-002	AND10057-4	STYLE S	Z 602-4

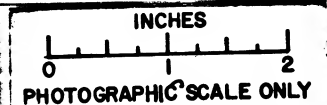
PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.



FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04637 DATE 11/19/63

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>D. Dehart</i> DATE 23 OCT 63 CHECKED <i>E. Foster</i> 31 OCT 63 APPROVAL <i>C. Kampman</i> 21 OCT 63 APPROVAL <i>L. G. Gorman</i> 11/15/63		COUPLING HALF, QUICK DISCONNECT	
SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		CODE IDENT NO.	NASA DRAWING NO.
FINAL FINISH NONE		SIZE C	1016238
NEXT ASSY	USED ON	SCALE NONE	WT
APPLICATION		SHEET 1 OF 1	

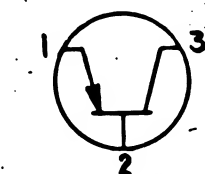


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REQUIREMENTS:

1. GENERAL:
 - A. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
 - B. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
2. INSPECTION AND ACCEPTANCE:
 - A. MECHANICAL REQUIREMENTS:
 - (1) LEAD DATA: KOVAR WITH GOLD PLATING.
 - (2) MARKING: THE MANUFACTURER'S NAME, TRADEMARK, OR CODE, AND MANUFACTURER'S TYPE DESIGNATION SHALL BE PERMANENTLY AND LEGIBLY MARKED ON THE PART.
 - (3) MECHANICAL DIMENSIONS PER OUTLINE.
 - B. ELECTRICAL REQUIREMENTS PER TABLE II
 - (1) EMITTER CUTOFF CURRENT (I_{CBO})
 - (2) COLLECTOR CUTOFF CURRENT (I_{CBO}) $T_A = 25^\circ C$
 - (3) SWITCHBACK VOLTAGE (V_{CE0})
 - (4) COLLECTOR SATURATION VOLTAGE ($V_{CE(SAT)}$)
 - (5) STATIC FORWARD CURRENT TRANSFER RATIO (h_{FE})
3. DESIGN REQUIREMENTS:
 - A. ELECTRICAL RATING: PER TABLE I
 - B. ELECTRICAL SPECIFICATION: PER TABLE II
 - C. JUNCTION TEMPERATURE: $-65^\circ C$ TO $+200^\circ C$
 - D. POWER DISSIPATION:
 - (1) AT $25^\circ C$ AMBIENT TEMPERATURE: 400 MILLIWATTS, MAXIMUM DERATING: LINEAR TO $+200^\circ C$
 - (2) AT $25^\circ C$ CASE TEMPERATURE: 4 WATTS, MAXIMUM DERATING: $40^\circ C/WATT$
4. SPECIAL CONDITIONING BY SUPPLIER:
 - A. BURN-IN: UNITS SHALL BE BURNED-IN FOR 240 HOURS AT THE FOLLOWING CONDITIONS:
 - (1) AMBIENT TEMPERATURE: $25^\circ \pm 10^\circ C$
 - (2) COLLECTOR VOLTAGE V_{CB} : -30 VOLTS $\pm 5\%$
 - (3) POWER DISSIPATION: 150 MW $\pm 10\%$ ($T_J = +105^\circ C$)
 - B. THE MANUFACTURER SHALL DETERMINE AND RECORD THE FOLLOWING ELECTRICAL CHARACTERISTICS FOLLOWING BURN-IN:
 - (1) EMITTER CUTOFF CURRENT, I_{EBO} .
 - (2) COLLECTOR CUTOFF CURRENT, I_{CBO} AT $T_C = 25^\circ C$
 - (3) COLLECTOR SATURATION VOLTAGE, $V_{CE(SAT)}$
 - (4) STATIC FORWARD CURRENT TRANSFER RATIO, h_{FE} (AT LOWEST SPECIFIED COLLECTOR CURRENT)
 - C. UNITS FAILING TO MEET INITIAL DRAWING REQUIREMENTS FOLLOWING BURN-IN SHALL NOT BE ACCEPTABLE. TEST DATA OF FINAL READING SHALL BE SUBMITTED WITH EACH SHIPMENT AND SHALL INCLUDE UNITS THAT FAIL DURING BURN-IN.

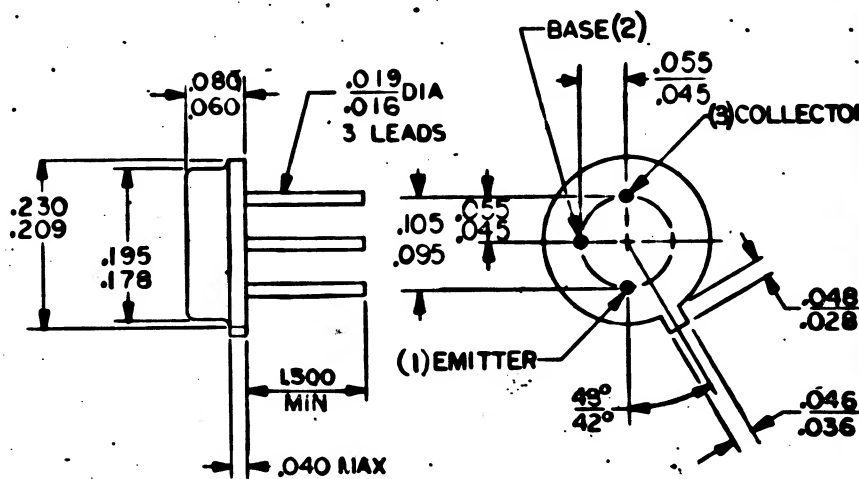
PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.



GRAPHICAL SYMBOL

FOR INFORMATION ONLY

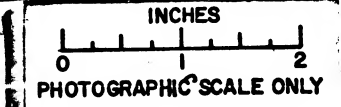
CLASS B RELEASE TDR No. 04637 DATE 11/14/63



SHEET 1	SHEET 2
REVISION	STATUS OF SHEETS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ± DO NOT SCALE THIS DRAWING MATERIAL SEE REQUIREMENTS HEAT TREATMENT NONE FINAL FINISH NONE	APPLICATION
NEXT ASSY	USED ON

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FRG NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Bender</i> 1-100-63 CHECKED <i>Ed Foster</i> 6 Nov 63 APPROVAL <i>G. BLECK</i> 6 Nov 63 APPROVAL <i>L. G. Johnson</i> 11/15/63		TRANSISTOR, SILICON, PNP	
NASA APPROVAL <i>W. H. Smith</i> 11/14/63 MIT APPROVAL <i>W. H. Smith</i> 11/14/63		SPECIFICATION CONTROL DRAWING	
CODE IDENT NO.		NASA DRAWING NO.	
C		1016239	
SCALE NONE		SHEET 1 OF 2	



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY AND ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSED THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFERRING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY INVENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

TABLE I

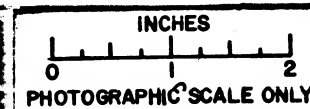
MANUFACTURER'S ABSOLUTE MAXIMUM RATINGS $T_C = +25^\circ\text{C}$					MANUFACTURER'S TYPE DESIGNATION (FOR REF. ONLY)
COLLECTOR VOLTAGE (V_{CB})	EMITTER VOLTAGE (V_{EB})	COLLECTOR VOLTAGE (V_{CE})	COLLECTOR POWER DISSIPATION	EIA TYPE DESIGNATION (FOR REFERENCE)	
V_{DC}	V_{DC}	V_{DC}	W		
-60	-6	-45	4	2N2605	1

TABLE II

ELECTRICAL CHARACTERISTICS AT $T_C = +25^\circ\text{C}$ (UNLESS OTHERWISE SPECIFIED)						
PARAMETER	CONDITIONS	SYMBOL	SPECIFICATION LIMITS			UNITS
			MIN.	MAX.		
SWITCHBACK VOLTAGE	$I_C = -10\text{ mA}$, $I_B = 0$	LV_{CE0}	-45	-		VOLTS
COLLECTOR BREAKDOWN VOLTAGE	$I_C = -10\text{ uA}$, $I_E = 0$	BV_{CB0}	-60	-		VOLTS
EMITTER BREAKDOWN VOLTAGE	$I_E = -10\text{ uA}$, $I_C = 0$	BV_{EB0}	-6	-		VOLTS
COLLECTOR CUTOFF CURRENT	$V_{CB} = -45\text{ V}$, $I_E = 0$	I_{CB0}	-	-10		nA
EMITTER CUTOFF CURRENT	$V_{EB} = -5\text{ V}$, $I_C = 0$	I_{EB0}	-	-2		nA
COLLECTOR CUTOFF CURRENT	$V_{CE} = -45\text{ V}$, $V_{BE} = 0$	I_{CES}	-	-10		nA
COLLECTOR CUTOFF CURRENT	$V_{CE} = -45\text{ V}$, $V_{BE} = 0$, $T_A = +150^\circ\text{C}$	I_{CES}	-	-10		uA
STATIC FORWARD CURRENT TRANSFER RATIO	$V_{CE} = -5\text{ V}$, $I_C = -1\text{ mA}$	h_{FE}	100	350		-
	$V_{CE} = -5\text{ V}$, $I_C = -10\text{ mA}$	h_{FE}	100	350		-
COLLECTOR SATURATION VOLTAGE	$I_C = -10\text{ mA}$, $I_B = -0.5\text{ mA}$	$V_{CE(sat)}$	-	-0.5		VOLTS
BASE SATURATION VOLTAGE	$I_C = -10\text{ mA}$, $I_B = -0.5\text{ mA}$	$V_{BE(sat)}$	-0.7	-0.9		VOLTS
SMALL-SIGNAL, SHORT CIRCUIT INPUT IMPEDANCE	$V_{CE} = -5\text{ V}$, $I_C = -1\text{ mA}$, $f = 1\text{ kc}$	h_{ib}	25	35		OHMS
SMALL-SIGNAL, OPEN CIRCUIT, REVERSE VOLTAGE TRANSFER RATIO	$V_{CE} = -5\text{ V}$, $I_C = -1\text{ mA}$, $f = 1\text{ kc}$	h_{rb}	-	10		$\times 10^{-4}$
SMALL-SIGNAL, OPEN-CIRCUIT, OUTPUT AMITTANCE	$V_{CE} = -5\text{ V}$, $I_C = -1\text{ mA}$, $f = 1\text{ kc}$	h_{ob}	-	1		u mho
OUTPUT CAPACITANCE	$V_{CE} = -5\text{ V}$, $I_E = 0$, $f = 1\text{ mc}$	C_{ob}	-	6		pf
COLLECTOR CUTOFF CURRENT	$V_{CB} = -45\text{ VDC}$, $T_C = 100^\circ\text{C}$	I_{CB0}	-	500		nA

1 TO BE ASSIGNED BY MANUFACTURER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Bender</i> 4-NOV-63 CHECKED <i>Ed Foster</i> 6 Nov 63 APPROVAL <i>G. BLECK</i> 6 Nov 63 APPROVAL <i>L. Goodman</i> 11/1/63		TRANSISTOR, SILICON, PNP	
SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		CODE IDENT NO.	NASA DRAWING NO.
FINAL FINISH NONE		SIZE C	1016239
APPLICATION		SCALE NONE	WT
		SHEET 2 OF 2	



FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04637 DATE 11/19/63

- 101241

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVAL

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 09634 DATE 5/27/64

Dialight Corp., Brooklyn, New York
Mfr's. part number 104-3502-211

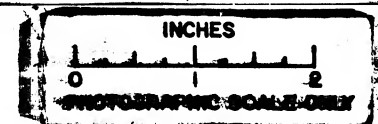
PROCURE ONLY FROM APPROVED SOURCES LISTED ON
ND 1002034 FOR THIS DRAWING.

		UNLESS OTHERWISE SPECIFIED				
		DIMENSIONS ARE IN INCHES				
		TOLERANCES ON				
		FRACTIONS DECIMALS ANGLES				
		DO NOT SCALE THIS DRAWING				
		MATERIAL:				
NEXT ASSY	USED ON					
APPLICATION						

MIT INSTRUMENTATION LAB CONTRACT NAS 9-153		DATE
APPROVED	<i>[Signature]</i>	5/27/64
CHECKED		
DRAWN	<i>[Signature]</i>	5/27/64
APPROVED FOR MSC		
<i>[Signature]</i> 5-27-64		
MIT/IL APPROVAL		DATE
<i>[Signature]</i> 5/27/64		

LIST OF PARTS AND MATERIALS		
Light-Indicating ASSEMBLY		
Specification Control Drawing		
SCALE	UNIT WT.	CODE IDENT.

MIT INSTRUMENTATION LABORATORY CAMBRIDGE, MASS.	
OWN. NO.	
MANNED SPACECRAFT CENTER HOUSTON TEXAS	
NASA DRAWING NO. 1010241	
SHEET	OF



- 2428101

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVAL

FOR INFORMATION ONLY

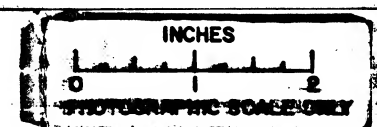
CLASS B RELEASE TDR No. 09634 DATE 5/22/64

Transistor Electronics Corp., Minneapolis, Minnesota.

DASH NUMBER	MANUFACTURER'S PART NUMBER	LENS COLOR
-1	MDL-IT2-S7-473-NE2U	Clear
-2	MDL-IT2-S2-473-NE2U	Trans. Red
-3	MDL-IT2-S3-473-NE2U	Trans. Amber
-4	MDL-IT2-S8-473-NE2U	Trans. White

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

QTY. REQD.		NOMENCLATURE OR DESCRIPTION		PART OR IDENTIFYING NO.		SPECIFICATION		MATERIAL OR NOTES		FIND NO.	
LIST OF PARTS AND MATERIALS											
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES DO NOT SCALE THIS DRAWING MATERIAL: NEXT ASSY USED ON APPLICATION				MIT INSTRUMENTATION LAB CONTRACT NAS 9-153 DATE 5/22/64 APPROVED <i>[Signature]</i> CHECKED <i>[Signature]</i> DRAWN <i>[Signature]</i> APPROVED FOR MSC <i>[Signature]</i> MIT/IV APPROVAL DATE 5/22/64				LIGHT - INDICATOR Specification Control Drawing SCALE UNIT WT. CODE IDENT. MIT INSTRUMENTATION LABORATORY CAMBRIDGE, MASS. DWS. NO. MANNED SPACECRAFT CENTER HOUSTON TEXAS NASA DRAWING NO. 1016242 SHEET OF			



NOTICE - WHEN GOVERNMENT DRAWING AND SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN THE ORIGINAL PURPOSE FOR WHICH THEY WERE PREPARED, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY DELAY, INADEQUACY, OR IN ANY WAY SUPPLIED THE SAID DRAWING, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER ENDORSEMENT OF THE HOLDING OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS						
SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
B		REPLACES REV A WITH CHANGES PER TDRR 18188	R.J.	✓		✓

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE SPECIFIED IN ND 1015404, CLASS 3.

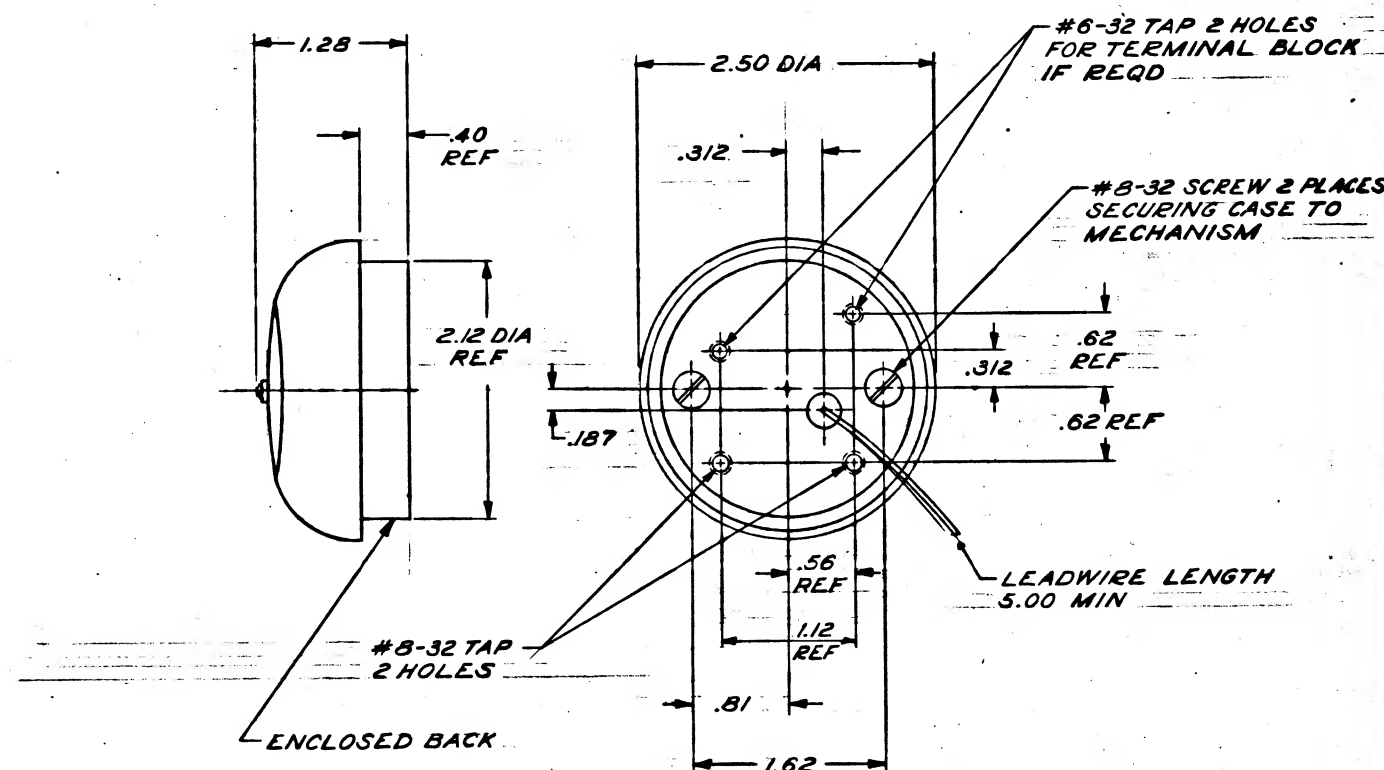
2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- MARKING: IDENTIFY USING NASA DRAWING NO., REV LETTER, AND MFGR'S SYMBOL PER ND 1002019.

B. ELECTRICAL REQUIREMENTS:

- OPERATING VOLTAGE: BELL SHALL OPERATE WITH 103.5 TO 126.5 VRMS, 60 CPS APPLIED.
- CURRENT CONSUMPTION: 50 MA.
- LEADWIRE PER MIL-W-16878.



REPLACES REV A WITH CHANGES

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

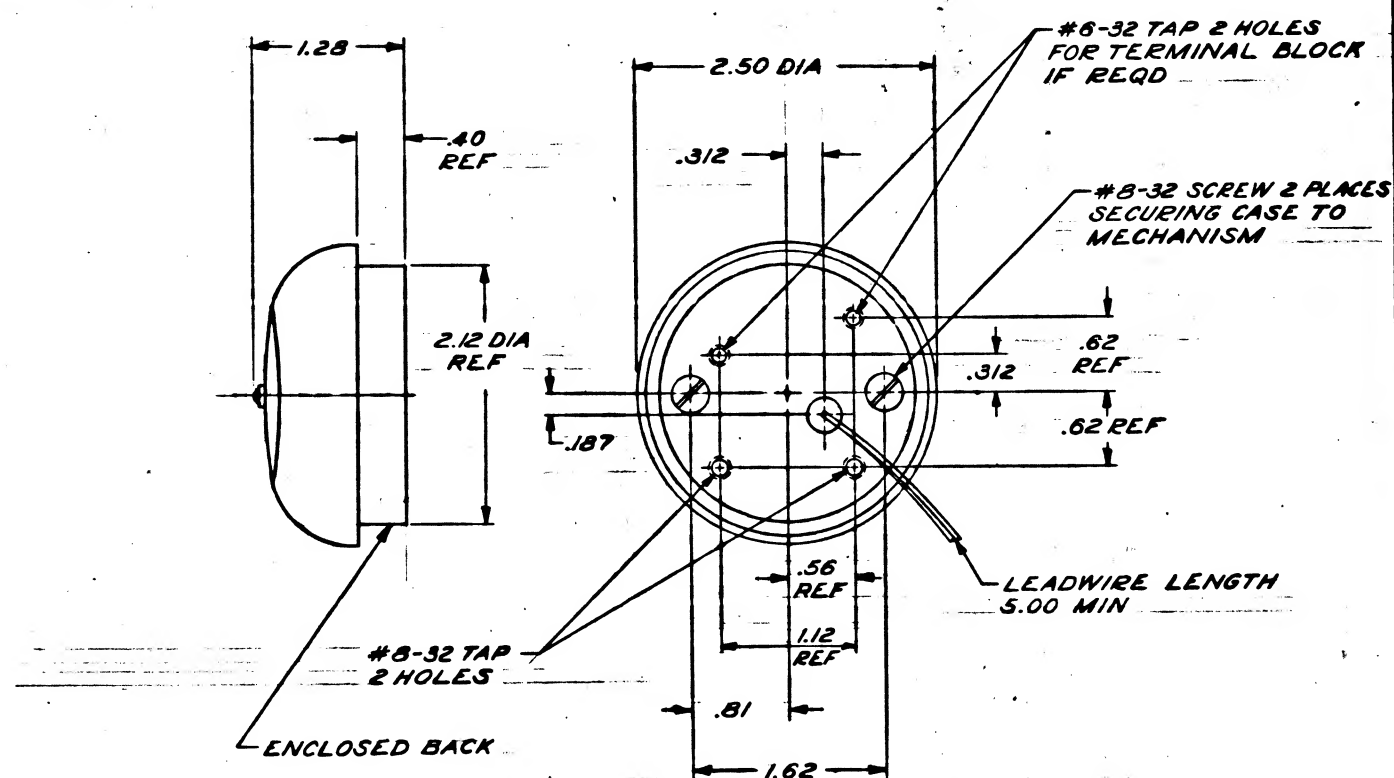
		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES CAPACITOR VALUES ARE IN μ F RESISTOR VALUES ARE IN OHMS TOLERANCES ON FRACTIONS DECIMALS ANGLES $\pm 1/64$ $\pm .005$ $\pm 1^\circ$ DO NOT SCALE THIS DRAWING
		MATERIAL
		<i>SEE REQUIREMENTS</i>
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS				
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS.		MANNED SPACECRAFT CENTER HOUSTON, TEXAS		
DRAWN <i>P.Y.Y.</i>	12/5/69	BELL-VIBRATING 115 VOLTS, 60 CPS SPECIFICATION CONTROL DRAWING		
CHECKED <i>P.Y.Y.</i>	2/3/65			
APPROVED <i>P.Y.Y.</i>	3/3/65	CODE IDENT NO. SIZE DRAWING NO. 80230 C 1016243		
APPROVED <i>P.Y.Y.</i>	2/24/65			
APPROVED MIT <i>W.C. Miller</i>	1/3/65	DATE	SCALE NONE	SHEET 1 OF 1
APPROVED MSC <i>P.Y.Y.</i>	4/13/69			

REVISIONS						
SYN	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
B		REPLACES REV A WITH CHANGES PER TDRR 18188	R.J.	✓		WJ
C		REVISED PER TDRR 23882	LR	✓	9/20/65	WJ

1. GENERAL:

1. GENERAL:
- A. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
 - B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN MIL-Q-985B.
2. INSPECTION AND ACCEPTANCE:
- A. MECHANICAL REQUIREMENTS:
 1. MARKING: UNITS SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME OR SYMBOL AND PART NUMBER.
 - B. ELECTRICAL REQUIREMENTS:
 1. OPERATING VOLTAGE: BELL SHALL OPERATE WITH 103.5 TO 126.5 VRMS, 60 CPS APPLIED.
 2. CURRENT CONSUMPTION: 30 MA (FOR REFERENCE).



REPLACES REV A WITH CHANGES

PROCURE ONLY FROM APPROVED SOURCES
LISTED ON ND 1002034 FOR THIS DRAWING.

			QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.
			LIST OF MATERIALS				
			MIT INSTRUMENTATION LAB CAMBRIDGE, MASS.		MANNED SPACECRAFT CENTER HOUSTON, TEXAS		
			DRAWN <i>R.Y.V.</i>	<i>12/6/60</i>	<i>BELL-VIBRATING</i>		
			CHECKED <i>B.K.</i>	<i>2/9/61</i>	<i>115 VOLTS, 60 CPS</i>		
			APPROVED <i>[Signature]</i>	<i>2/9/61</i>	<i>SPECIFICATION CONTROL DRAWING</i>		
			APPROVED <i>J.W. Winston</i>	<i>2/26/61</i>			
			APPROVED MIT <i>[Signature]</i>	<i>1/30/61</i>	CODE IDENT NO.	SIZE	DRAWING NO.
				<i>4/13/61</i>	<i>80230</i>	<i>C</i>	<i>1016243</i>
			APPROVED MSC <i>[Signature]</i>		SCALE <i>NONE</i>		
				DATE			SHEET / OF /

PROTECTOR

WATKINS #9

- 8789101

REVISIONS			
ZONE	SYM	DESCRIPTION	DATE

FOR INFORMATION ONLY

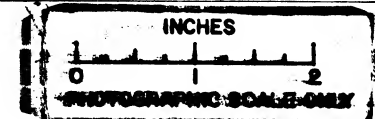
CLASS B RELEASE TDR No. 09634 DATE

5/27/64

Wheelock Signals Inc., Long Branch, New Jersey.
Manufacturer's Part Number VP2-3

PROCURE ONLY FROM APPROVED SOURCES
LISTED ON ND 1002034 FOR THIS DRAWING.

		UNLESS OTHERWISE SPECIFIED		MIT INSTRUMENTATION LAB CONTRACT		BELL-VIBRATING 115 VOLTS, 60 CPS		MIT INSTRUMENTATION LABORATORY CAMBRIDGE, MASS.	
		DIMENSIONS ARE IN INCHES TOLERANCES ON		NAS 9-153 DATE				DWS. NO.	
		FRACTIONS DECIMALS ANGLES		APPROVED <u>AS</u> <u>5/27/64</u>				MANNED	
				CHECKED <u>WJ</u> <u>5/27/64</u>				SPACECRAFT CENTER	
		DO NOT SCALE THIS DRAWING		DRAWN <u>WJ</u> <u>5/27/64</u>		Specification Control Drawing		HOUSTON TEXAS	
		MATERIAL:		APPROVED FOR MISC <u>WJ</u> <u>5/27/64</u>		SCALE		UNIT WT.	
NEXT ASSY		USED ON		MIT/IL APPROVAL DATE		CODE IDENT.		NASA DRAWING NO.	
APPLICATION				<u>WJ</u> <u>5/27/64</u>				1016243	
								SHEET OF	



9101

REVISIONS			
ZONE	SYM	DESCRIPTION	DATE

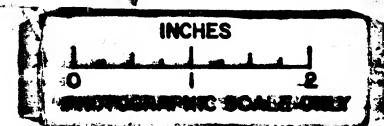
FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 09634 DATE 5/27/64

Bendix Aviation Corp., Sidney, New York
Manufacturer's Part Number PT00SE-12-8PW

PROCURE ONLY FROM APPROVED SOURCES
LISTED ON ND 1002034 FOR THIS DRAWING.

QTY. REQD.	NOMENCLATURE OR DESCRIPTION	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTES	FIND NO.
LIST OF PARTS AND MATERIALS					
UNLESS OTHERWISE SPECIFIED		MIT INSTRUMENTATION LAB CONTRACT NAS 9-153		MIT INSTRUMENTATION LABORATORY CAMBRIDGE, MASS.	
DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES		DATE 5/27/64		DWS. NO.	
DO NOT SCALE THIS DRAWING		CHECKED 5/27/64		MANNED SPACECRAFT CENTER HOUSTON TEXAS	
MATERIAL:		DRAWN 5/27/64		NASA DRAWING NO. 1016244	
NEXT ASSY		MIT/IL APPROVAL 5/27/64		SHEET OF	
USED ON		DATE			
APPLICATION					



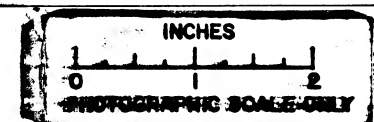
REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVA

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 09634 DATE 5/27/64

QTY. REQD.	NOMENCLATURE OR DESCRIPTION	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTES	FILE NO.
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1010247

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVAL

Hickok Instrument Co., Cleveland, Ohio.
Manufacturer's Part Number 56 HR

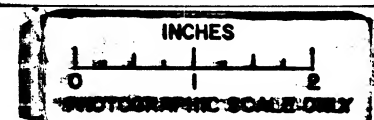
FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 09634 DATE 5/27/64

PROCURE ONLY FROM APPROVED SOURCES
LISTED ON ND 1002034 FOR THIS DRAWING.

		UNLESS OTHERWISE SPECIFIED
		DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		DO NOT SCALE THIS DRAWING
		MATERIAL:
NEXT ASSY	USED ON	
APPLICATION		

QTY. REQD.	NOMENCLATURE OR DESCRIPTION	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTES	FIND NO.
LIST OF PARTS AND MATERIALS					
MIT INSTRUMENTATION LAB CONTRACT NAS 9-153			MIT INSTRUMENTATION LABORATORY CAMBRIDGE, MASS.		
APPROVED <u>A. J. Kelly</u> DATE <u>5/27/64</u>			DWS. NO.		
CHECKED <u>W. J. Kelly</u> DATE <u>5/27/64</u>			MANNED SPACECRAFT CENTER HOUSTON TEXAS		
DRAWN <u>W. J. Kelly</u> DATE <u>5/27/64</u>			NASA DRAWING NO. 1016247		
APPROVED FOR MSC <u>W. J. Kelly</u> DATE <u>5/27/64</u>			SHEET OF		
MIT/L APPROVAL					
DATE					



- 829101

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVAL

Simpson Electro Co., Chicago, Illinois.
Manufacturer's Part Number 182R-03199

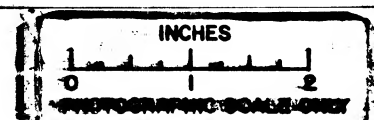
FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 09634 DATE 5/27/64

PROCURE ONLY FROM APPROVED SOURCES
LISTED ON ND 1002034 FOR THIS DRAWING.

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		DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		DO NOT SCALE THIS DRAWING
		MATERIAL:
NEXT ASSY	USED ON	
APPLICATION		

QTY. REQD.	NOMENCLATURE OR DESCRIPTION	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTES	FIND NO.
LIST OF PARTS AND MATERIALS					
MIT INSTRUMENTATION LAB CONTRACT NAS 9-153		AMMETER		MIT INSTRUMENTATION LABORATORY CAMBRIDGE, MASS.	
APPROVED	<i>[Signature]</i>	DATE	5/27/64	DWG. NO.	
CHECKED	<i>[Signature]</i>			MANNED	
DRAWN	<i>[Signature]</i>	DATE	5/27/64	SPACECRAFT CENTER	
APPROVED FOR MSC	<i>[Signature]</i>			HOUSTON TEXAS	
MIT/IL APPROVAL	<i>[Signature]</i>	DATE		NASA DRAWING NO.	
				101 6248	
				SHEET	OF



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS						
SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
	B	REPLACES REV A WITH CHANGES TDRR 21196	L.M.	V.V.	27/4/65	W.H.

REQUIREMENTS

1. GENERAL:

- A. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
- B. THESE CONNECTIONS SHALL CONFORM TO THE REQUIREMENTS OF MIL-C-26482 AND MS3126 EXCEPT FOR INSERT ARRANGEMENT.
- C. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN MIL-Q-9858.
- D. UNITS SHALL BE CAPABLE OF MEETING QUALIFICATION REQUIREMENTS OF ND 1002052 UNLESS OTHERWISE SPECIFIED.
- E. UNITS SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL AND PART NUMBER. EACH CONTAINER SHALL INCLUDE THE DRAWING AND DASH NUMBER PLUS THE REVISION LETTER. ALSO THE ELASTOMER CURE DATE.
- F. CONTACTS ARE SUPPLIED SEPARATELY IN PLIOFILM BAGS WITH 10% SPARES.

2. ACCEPTANCE AND INSPECTION REQUIREMENTS:

- A. ELECTRICAL CHARACTERISTICS (IN ACCORDANCE WITH THE MILITARY SPECIFICATION):
- (1) DIELECTRIC WITHSTANDING VOLTAGE: 1500 VRMS.
- (2) INSULATION RESISTANCE: 5000 MEGOHMS MINIMUM AT 500 VDC.
- (3) CONTACT RESISTANCE: 55 MILLIVOLTS MAXIMUM AT 75A PER MIL-C-23216.

3. DESIGN REQUIREMENTS:

- A. OPERATING LIFE: SEE RELIABILITY NOTE 3D.
- B. STORAGE LIFE: 1 YEAR WITHOUT GROMMET DETERIORATION.
- C. CONSTRUCTION:
- (1) TYPE CONNECTOR: ENVIRONMENT SEALED BY A GROMMET AND INSERT WITH A STRAIN RELIEF CLAMP. SOLID SHELL WITH POSITIVE INSERT RETENTION.
- (2) TYPE CONTACT: CRIMP CONTACTS PER MS 3192
- (3) NUMBER AND SIZE OF CONTACTS: SEE TABLE I.
- (4) COUPLING: BAYONET.
- D. RELIABILITY: CONNECTORS SHALL BE CAPABLE OF WITHSTANDING 500 CYCLES OF ENGAGEMENT AND DISENGAGEMENT WITHOUT ELECTRICAL OR MECHANICAL FAILURE.
- E. INSULATION RESISTANCE (+125°C): 50 MEGOHMS MINIMUM AT 500VDC.
- F. WORKING VOLTAGE: 500 VRMS, 700 VDC.
- G. TEMPERATURE: +125°C MAX

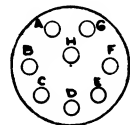
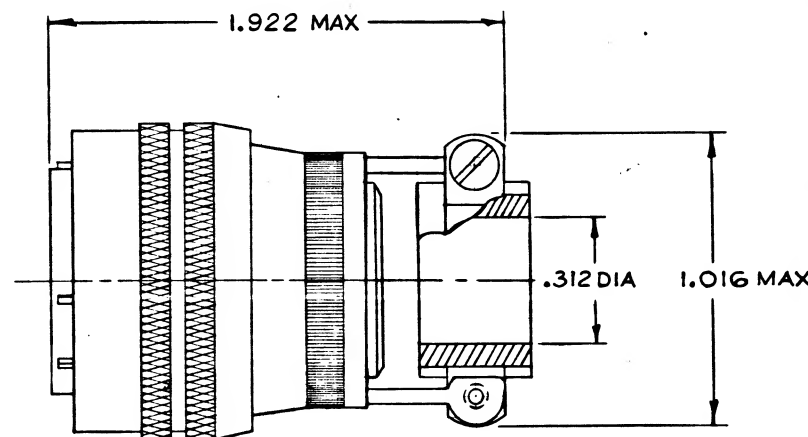
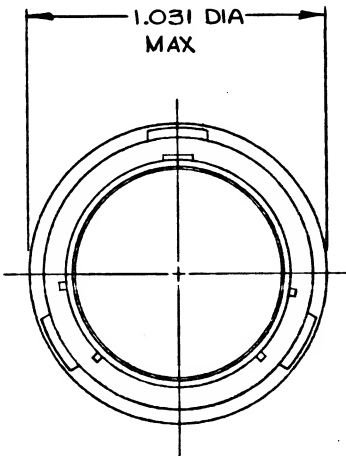


FIG 1
VIEW LOOKING INTO FRONT OF INSERT

REPLACES REV A WITH CHANGES

TABLE I

PART NO.	CONTACTS FIGURE 1	INSERT ROTAT	VENDORS PART IDENT.
1016249-001	8 NO.20	0°	PT06SE-12-8S (SR)
-002		90°	SW
-003		112°	SX
-004		203°	SY
-005		292°	SZ

MASTER

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. CAPACITOR VALUES ARE IN μ F. RESISTOR VALUES ARE IN OHMS. TOLERANCES ON FRACTIONS DECIMALS ANGLES \pm \pm \pm DO NOT SCALE THIS DRAWING
		MATERIAL
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS				
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS.		MANNED SPACECRAFT CENTER HOUSTON, TEXAS		
DRAWN	L.MORSE	7-6-65	CONNECTOR-PLUG	
CHECKED	W.H. Hightower	26/4/65		
APPROVED	J.K. Smith	27/4/65		
APPROVED	J.M. Watson	7-27-65	SPECIFICATION CONTROL DRAWING	
APPROVED	MIT	27/4/65	CODE IDENT NO.	SIZE
APPROVED	MSC	1/2/65	80230	C
DATE		SCALE	NONE	DRAWING NO. 1016249
			SHEET 1 OF 1	

6129101

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVAL

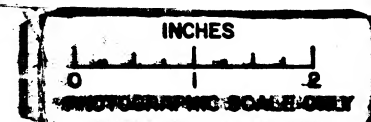
Bendix Aviation Corp., Sidney, New York
Manufacturer's Part Number PT06SE-12-8SW(SR)

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 09634 DATE 5/27/64

PROCURE ONLY FROM APPROVED SOURCES
LISTED ON ND 1002034 FOR THIS DRAWING.

QTY. REQD.	NOMENCLATURE OR DESCRIPTION	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTES	FIND NO.
LIST OF PARTS AND MATERIALS					
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES		MIT INSTRUMENTATION LAB CONTRACT NAS 9-153		MIT INSTRUMENTATION LABORATORY CAMBRIDGE, MASS.	
		DATE <u>5/27/64</u>		DWG. NO.	
		APPROVED <u>[Signature]</u>		MANNED SPACECRAFT CENTER HOUSTON TEXAS	
		CHECKED <u>[Signature]</u>		NASA DRAWING NO. 1016249	
DO NOT SCALE THIS DRAWING		DRAWN <u>[Signature]</u>		SHEET OF	
MATERIAL:		APPROVED FOR <u>MSC</u>			
NEXT ASSY USED ON		<u>W. J. R. [Signature]</u>			
APPLICATION		MIT/L APPROVAL DATE			
		<u>[Signature]</u>			



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS					
SYM	ZONE	DESCRIPTION	DR	CHK	DATE
B		REPLACES REV A WITH CHANGES PER TDRR 18188	R.J.	W	

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
- SUPPLIER PROCESS AND QUALITY CONTROL, INCLUDING FINAL TESTING, SHALL BE IN ACCORDANCE WITH SPECIFICATION ND1015404, CLASS 3.
- EACH UNIT SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, ITEM NAME, NASA DRAWING NUMBER AND REVISION LETTER, NET CONTENTS, DATE OF MANUFACTURE, ETC.

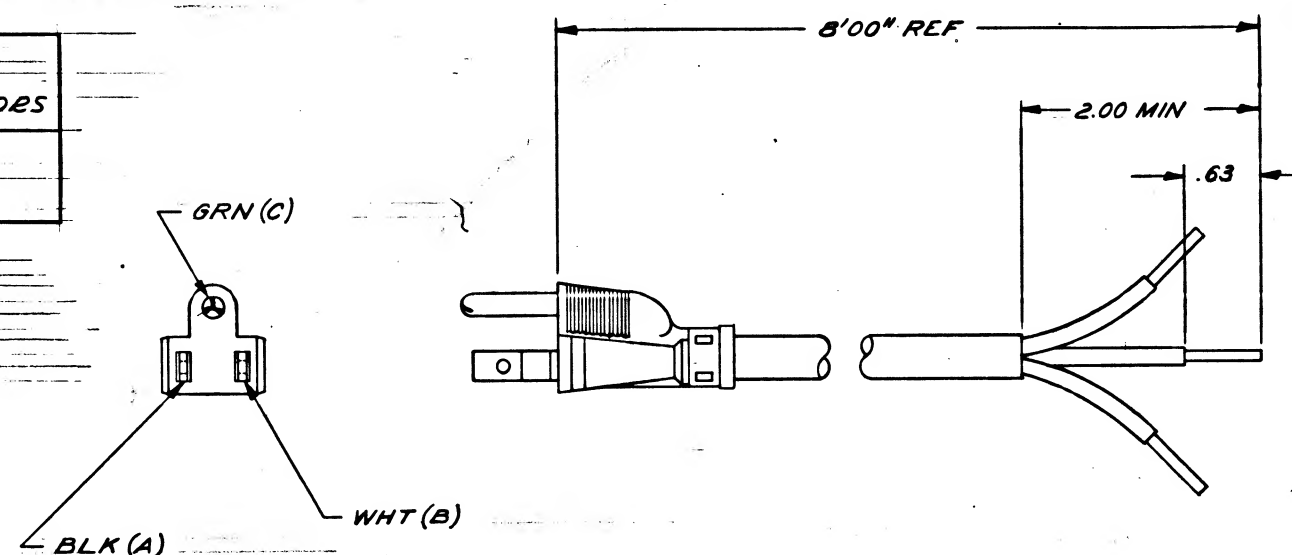
2. ACCEPTANCE AND INSPECTION REQUIREMENTS:

CONSTRUCTION:

INSULATION: RUBBER

LENGTH OF CORD (FT)	AWG (STRANDING)	JACKET MATERIAL	JACKET COLOR	CONDUCTOR INSULATION COLOR	NUMBER OF CONDUCTORS
8	18 (16 X 30)	SJ RUBBER	BLACK	BLACK WHITE GREEN	3

THE INDIVIDUAL WIRE SHALL BE SO POSITIONED USING A JUTE FILLER AS TO PRODUCE A UNIFORM CONFIGURATION. THE RESULTING CONFIGURATION SHALL BE COVERED WITH A PAPER TAPE SEPARATOR PRIOR TO THE APPLICATION OF THE RUBBER JACKET.



REPLACES REV A WITH CHANGES

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND1002034 FOR THIS DRAWING.

MASTER

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES CAPACITOR VALUES ARE IN μ f RESISTOR VALUES ARE IN OHMS TOLERANCES ON FRACTIONS DECIMALS ANGLES \pm % \pm % \pm % DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS.
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS				
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS.		MANNED SPACECRAFT CENTER HOUSTON, TEXAS		
DRAWN	11/29/60	CORD SET		
CHECKED	2/19/61			
APPROVED	2/19/61			
APPROVED	2/26/61	SPECIFICATION CONTROL DRAWING		
APPROVED MIT	1/30/61	CODE IDENT NO.	SIZE	DRAWING NO.
APPROVED MSC	4/13/61	80230	C	1016250
DATE		SCALE NONE	SHEET 1 OF 1	

- 1016250

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVA

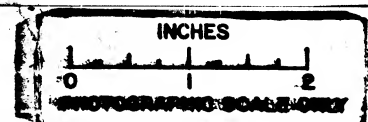
Belden Manufacturing Co., Chicago, Illinois
Manufacturer's Part Number 17408-S

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 096 34 DATE 5/27/64

PROCURE ONLY FROM APPROVED SOURCES
LISTED ON ND 1002034 FOR THIS DRAWING.

QTY. REQD.	NOMENCLATURE OR DESCRIPTION	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTES	FIN NO.
LIST OF PARTS AND MATERIALS					
MIT INSTRUMENTATION LAB CONTRACT NAS 9-153 DATE 5/27/62 APPROVED <i>A. J. Gandy</i> CHECKED <i>J. K. Gandy</i> DRAWN <i>J. K. Gandy</i> APPROVED FOR MSC <i>W. J. R. Ph. 5-22-62</i> MIT/JL APPROVAL DATE <i>W. J. R. Ph. 27 May 62</i>		CORD SET Specification Control Drawing		MIT INSTRUMENTATION LABORATORY CAMBRIDGE, MASS. DWS. NO. MANNED SPACECRAFT CENTER HOUSTON TEXAS NASA DRAWING NO. 1016250 SHEET OF	



- 1929101

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVAL

Helipot Division, Beckmann Instrument Inc., Fullerton, California
Manufacturer's Part Number 7221-50

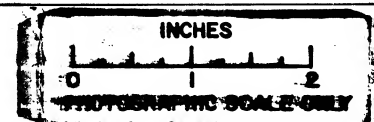
FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 09634 DATE 5/2/64

PROCURE ONLY FROM APPROVED SOURCES
LISTED ON ND 1002034 FROM THIS DRAWING.

		UNLESS OTHERWISE SPECIFIED
		DIMENSIONS ARE IN INCHES
		TOLERANCES ON FRACTIONS DECIMALS ANGLES
		DO NOT SCALE THIS DRAWING
		MATERIAL:
NEXT ASSY	USED ON	
APPLICATION		

QTY. REQD.	NOMENCLATURE OR DESCRIPTION	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTES	FIND NO.
LIST OF PARTS AND MATERIALS					
	MIT INSTRUMENTATION LAB CONTRACT NAS 9-153	DATE	RESISTOR-VARIABLE 10TURN, 2.5W	MIT INSTRUMENTATION LABORATORY CAMBRIDGE, MASS.	
APPROVED	<i>[Signature]</i>	<i>[Signature]</i>		DWG. NO.	
CHECKED	<i>[Signature]</i>	<i>[Signature]</i>		MANNED SPACECRAFT CENTER HOUSTON TEXAS	
DRAWN	<i>[Signature]</i>	<i>[Signature]</i>	Specification Control Drawing	NASA DRAWING NO. 1016251	
APPROVED FOR MSC	<i>[Signature]</i>	<i>[Signature]</i>	SCALE UNIT WT. CODE IDENT.	SHEET OF	
DATE/IL APPROVAL	<i>[Signature]</i>	<i>[Signature]</i>			



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REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND1015404, CLASS 3.

2. INSPECTION & ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- LEAD MATERIAL: SOLDERABLE LEADS.
- DIMENSIONS: SEE SKETCH.

B. ELECTRICAL REQUIREMENTS:

- RESISTANCE: PER TABLE I (AT 25° ±1°C).
- RESISTANCE TOLERANCE: ±0.1%.
- TEMPERATURE COEFFICIENT: ±20PPM/°C TAKEN OVER THE TEMPERATURE RANGE OF -50° TO +105°C.

3. DESIGN REQUIREMENTS:

A. ENVIRONMENTAL REQUIREMENTS:

- AMBIENT TEMPERATURE RANGE: 105°C MAX.
- VIBRATION: 5 TO 500 CPS AT 2 G.
- ALTITUDE: 40,000 FEET.

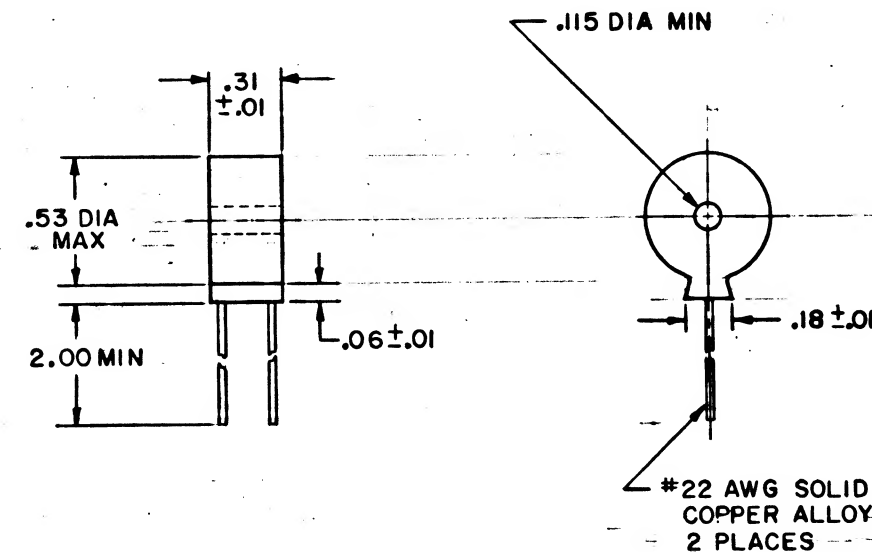
B. POWER RATING: 1/4 WATT FROM -55° TO 85°C DERATED LINEARLY TO 0.0W AT 105°C.

4. MARKING:

- (PER MIL-STD-130) PARTS SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME OR SYMBOL, TYPE NUMBER, RESISTANCE VALUE, TOLERANCE AND WATTAGE RATING. EACH INTERIOR AND EXTERIOR PACKAGE SHALL ALSO CONTAIN THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.

TABLE I

NASA PART NUMBER	RESISTANCE (OHMS)
1016252-1	735
-2	2133
-3	2309
-4	2504
-5	1535



REPLACES REV A WITH CHANGES

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND1002034 FOR THIS DRAWING.

MASTER

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN μ F
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± ± ±
DO NOT SCALE THIS DRAWING
MATERIAL

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS				
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS.		MANNED SPACECRAFT CENTER HOUSTON, TEXAS		
DRAWN <i>P.J.</i>	12/4/68	RESISTOR, FIXED WW ENCAPSULATED 0.1% 1/4 WATT SPECIFICATION CONTROL DRAWING		
CHECKED <i>P.J.</i>	2/3/69			
APPROVED <i>P.J.</i>	2/3/69			
APPROVED <i>P.J.</i>	2/26/69			
APPROVED MIT <i>W. L. ...</i>	2/26/69	CODE IDENT NO.	SIZE	DRAWING NO.
APPROVED MSC <i>G. C. ...</i>	2/26/69	80230	C	1016252
		DATE	SCALE NONE	SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- A. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND1015404, CLASS 3.

2. INSPECTION & ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

1. LEAD MATERIAL: SOLDERABLE LEADS.
2. DIMENSIONS: SEE SKETCH.

B. ELECTRICAL REQUIREMENTS:

1. RESISTANCE: PER TABLE I (AT 25° ±1°C).
2. RESISTANCE TOLERANCE: ±0.1%.
3. TEMPERATURE COEFFICIENT: ±20PPM/°C TAKEN OVER THE TEMPERATURE RANGE OF -50° TO +105°C.

3. DESIGN REQUIREMENTS:

A. ENVIRONMENTAL REQUIREMENTS:

1. AMBIENT TEMPERATURE RANGE: 105°C MAX.
2. VIBRATION: 5 TO 500 CPS AT 2 G.
3. ALTITUDE: 40,000 FEET.

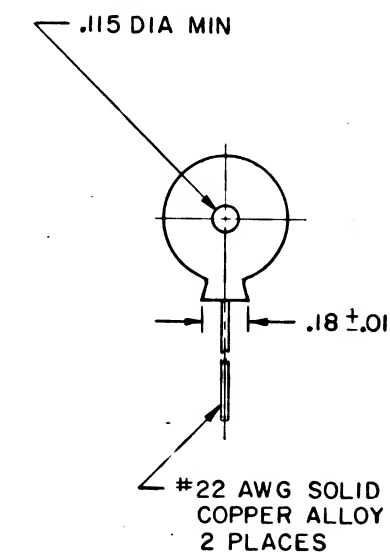
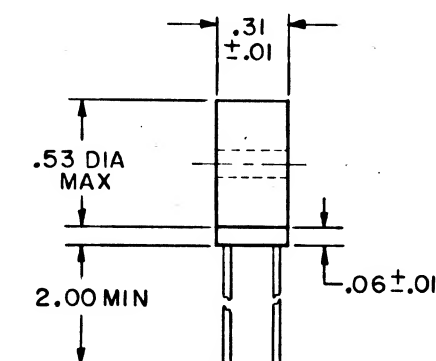
- B. POWER RATING: 1/4 WATT FROM -55° TO 85°C DERATED LINEARLY TO 0.0W AT 105°C.

4. MARKING:

- A. (PER MIL-STD-130) PARTS SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME OR SYMBOL, TYPE NUMBER, RESISTANCE VALUE, TOLERANCE AND WATTAGE RATING. EACH INTERIOR AND EXTERIOR PACKAGE SHALL ALSO CONTAIN THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.

TABLE I

NASA PART NUMBER	RESISTANCE (OHMS)
1016252-1	735
-2	2133
-3	2309
-4	2504
-5	1535
-6	730.1
-7	2722.0
-8	2964.0



REPLACES REV A WITH CHANGES

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND1002034 FOR THIS DRAWING.

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN μ f
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± ± ±
DO NOT SCALE THIS DRAWING
MATERIAL

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS				
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS.		MANNED SPACECRAFT CENTER HOUSTON, TEXAS		
DRAWN <i>G. J. J.</i> 12/4/64		RESISTOR, FIXED WW ENCAPSULATED 0.1% 1/4 WATT		
CHECKED <i>B. K. J.</i> 7/9/65				
APPROVED <i>B. K. J.</i> 7/9/65				
APPROVED <i>J. M. Weston</i> 2/26/65				
APPROVED <i>W. K. J.</i> 12/4/64		SPECIFICATION CONTROL DRAWING		
APPROVED <i>G. J. J.</i> 4/1/65		CODE IDENT NO.	SIZE	DRAWING NO.
APPROVED MSC		80230	C	1016252
DATE		SCALE NONE	SHEET 1 OF 1	

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REQUIREMENTS:

1. GENERAL:

- A. INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND1015404, CLASS 3.

2. INSPECTION & ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

1. LEAD MATERIAL: SOLDERABLE LEADS.
2. DIMENSIONS: SEE SKETCH.

B. ELECTRICAL REQUIREMENTS:

1. RESISTANCE: PER TABLE I (AT 25° ±1°C).
2. RESISTANCE TOLERANCE: ±0.1%.
3. TEMPERATURE COEFFICIENT: ±20PPM/°C TAKEN OVER THE TEMPERATURE RANGE OF -50° TO +105°C.

3. DESIGN REQUIREMENTS:

A. ENVIRONMENTAL REQUIREMENTS:

1. AMBIENT TEMPERATURE RANGE: 105°C MAX.
2. VIBRATION: 5 TO 500 CPS AT 2 G.
3. ALTITUDE: 40,000 FEET.

- B. POWER RATING: 1/4 WATT FROM -55° TO 85°C DERATED LINEARLY TO 0.0W AT 105°C.

4. MARKING:

- A. (PER MIL-STD-130) PARTS SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME OR SYMBOL, TYPE NUMBER, RESISTANCE VALUE, TOLERANCE AND WATTAGE RATING. EACH INTERIOR AND EXTERIOR PACKAGE SHALL ALSO CONTAIN THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.

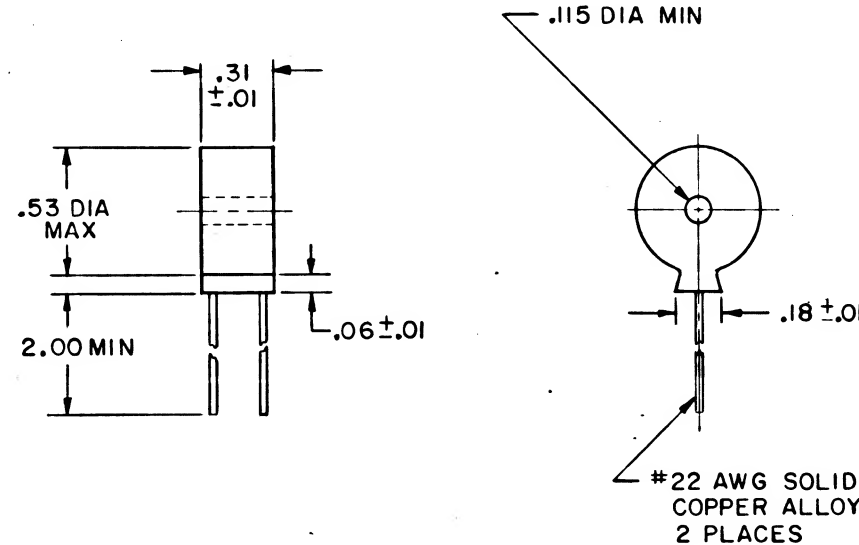
TABLE I

NASA PART NUMBER	RESISTANCE (OHMS)
1016252-1	735
-2	2133
-3	2309
-4	2504
-5	1535
-6	730.1
-7	2722.0
-8	2964.0
-9	2236

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND1002034 FOR THIS DRAWING.

REPLACES REV A WITH CHANGES

REVISIONS					
SYM	ZONE	DESCRIPTION	DR	CHK	DATE
B		REPLACES REV A WITH CHANGES PER TDRR 18188	R.J.	✓	
C		REVISED PER TDRR 28125	JMP	JAC	27 APR 66
D		REVISED PER TDRR 29414	\$	NEW	14 JUN 66



QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS				
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS.		MANNED SPACECRAFT CENTER HOUSTON, TEXAS		
DRAWN <i>C.F.J.</i> 12/4/65 CHECKED <i>R.L.S.</i> 7/9/66 APPROVED <i>R.L.S.</i> 2/9/66 APPROVED <i>J. M. Watson</i> 2/26/66		RESISTOR, FIXED WW ENCAPSULATED 0.1% 1/4 WATT		
APPROVED MIT <i>W. C. W.</i> 1/26/66 APPROVED MSC <i>C. C. W.</i> 4/12/66		SPECIFICATION CONTROL DRAWING		
CODE IDENT NO. 80230 DATE 4/12/66		SIZE C DRAWING NO. 1016252		
SCALE NONE		SHEET 1 OF 1		

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND1015404, CLASS 3.

2. INSPECTION & ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- LEAD MATERIAL: SOLDERABLE LEADS.
- DIMENSIONS: SEE SKETCH.

B. ELECTRICAL REQUIREMENTS:

- RESISTANCE: PER TABLE I (AT 25° ±1°C).
- RESISTANCE TOLERANCE: ±0.1%.
- TEMPERATURE COEFFICIENT: ±20PPM/°C TAKEN OVER THE TEMPERATURE RANGE OF -50° TO +105°C.

3. DESIGN REQUIREMENTS:

A. ENVIRONMENTAL REQUIREMENTS:

- AMBIENT TEMPERATURE RANGE: 105°C MAX.
- VIBRATION: 5 TO 500 CPS AT 2 G.
- ALTITUDE: 40,000 FEET.

B. POWER RATING: 1/4 WATT FROM -55° TO 85°C DERATED LINEARLY TO 0.0W AT 105°C.

4. MARKING:

- (PER MIL-STD-130) PARTS SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME OR SYMBOL, TYPE NUMBER, RESISTANCE VALUE, TOLERANCE AND WATTAGE RATING. EACH INTERIOR AND EXTERIOR PACKAGE SHALL ALSO CONTAIN THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.

TABLE I

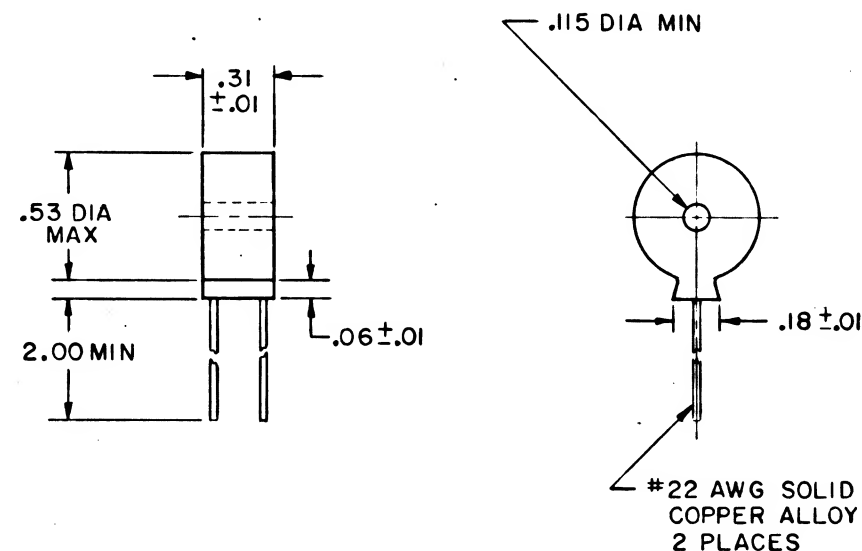
NASA PART NUMBER	RESISTANCE (OHMS)
1016252-1	735
-2	2133
-3	2309
-4	2504
-5	1535
-6	730.1
-7	2722.0
-8	2964.0
-9	2236
-10	2219
-11	2201

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND1002034 FOR THIS DRAWING.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES CAPACITOR VALUES ARE IN μ f RESISTOR VALUES ARE IN OHMS TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ± DO NOT SCALE THIS DRAWING
		MATERIAL
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS				
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS.		MANNED SPACECRAFT CENTER HOUSTON, TEXAS		
DRAWN <i>R.J.</i>	12/4/64	RESISTOR, FIXED WW ENCAPSULATED 0.1% 1/4 WATT		
CHECKED <i>B. K.</i>	7/3/65			
APPROVED <i>B. K.</i>	7/3/65	SPECIFICATION CONTROL DRAWING		
APPROVED <i>M. Weston</i>	2/26/65			
APPROVED MIT <i>W. K.</i>	7/3/65	CODE IDENT NO.	SIZE	DRAWING NO.
APPROVED MSC <i>C. M.</i>	4/1/66	80230	C	1016252
	DATE	SCALE NONE		SHEET 1 OF 1

REVISIONS					
SYM	ZONE	DESCRIPTION	DR	CHK	DATE
B		REPLACES REV A WITH CHANGES PER TDRR 18188	R.J.	W	
C		REVISED PER TDRR 28125	JMP	JAC	26 JUN 66
D		REVISED PER TDRR 29414	\$		14 JUN 66
E		REVISED PER TDRR 29993	J.E.		18 JULY 66



REPLACES REV A WITH CHANGES

- 2929101

REVISIONS			
ZONE	SYM	DESCRIPTION	DATE

Precision Inc., Minneapolis, Minnesota
Manufacturer's Part Number See Below

DASH NUMBER	MANUFACTURER'S PART NUMBER	TOL.	VALUE
-1	EWEK-0.1, 735 Ohms.	0.1%	735 Ohms.
-2	EWEK-0.1, 2133 Ohms.	0.1%	2133 Ohms.
-3	EWEK-0.1, 2309 Ohms.	0.1%	2309 Ohms.
-4	EWEK-0.1, 2504 Ohms.	0.1%	2504 Ohms.
-5	EWEK-0.1, 1513 Ohms.	0.1%	1513 Ohms.

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 09634 DATE 5/27/64

PROCURE ONLY FROM APPROVED SOURCES
LISTED ON ND 1002034 FOR THIS DRAWING.

QTY. REQD.	NOMENCLATURE OR DESCRIPTION	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTES	FIND NO.
LIST OF PARTS AND MATERIALS					
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES		M I T INSTRUMENTATION LAB CONTRACT NAS 9-153 DATE APPROVED <i>S. J. Kelly</i> 5/27/64 CHECKED DRAWN <i>W. J. Kelly</i> 5/27/64 APPROVED FOR <i>W. J. Kelly</i> 5/27/64 M I T APPROVAL DATE <i>W. J. Kelly</i> 5/27/64		RESISTOR, FIXED WW ENCAPSULATED .01% 1/4 Watt Specification Control Drawing SCALE UNIT WT. CODE IDENT.	
DO NOT SCALE THIS DRAWING MATERIAL: NEXT ASSY USED ON APPLICATION		M I T INSTRUMENTATION LABORATORY CAMBRIDGE, MASS. DWG. NO. MANNED SPACECRAFT CENTER HOUSTON TEXAS NASA DRAWING NO. 1016252 SHEET OF			



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCURED AT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY, NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFESSING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

REVISIONS						
SYM	ZONE	DESCRIPTION	DR	CHK	DATE	APPROVED
B		REPLACES REV A WITH CHANGES PER TDR 18188	R. J. W.	W		W

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. ELECTRICAL REQUIREMENTS:

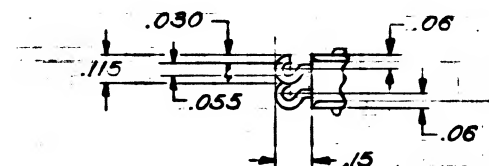
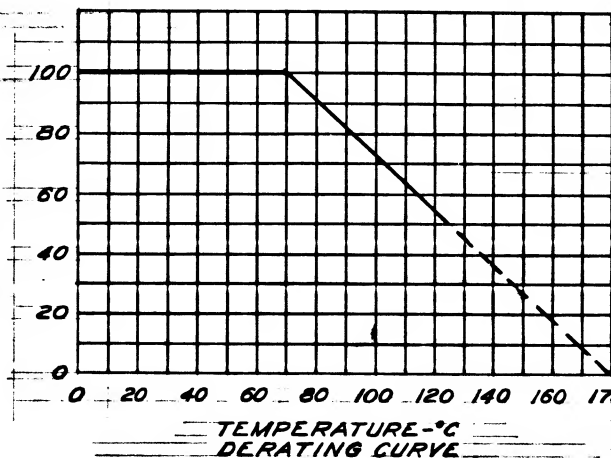
- TOTAL RESISTANCE: PER TABLE I.
- MAXIMUM END RESISTANCE: 0 TO 1/2 OHM OR 1% RT, WHICHEVER IS GREATER.
- EQUIVALENT NOISE RESISTANCE: 140 MV MAX AT 1 CYCLE PER MINUTE OR LESS PER FIG. 1.

B. MECHANICAL REQUIREMENTS:

- MARKING: PARTS SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME OR SYMBOL, TYPE NO. AND RESISTANCE VALUE.

3. DESIGN REQUIREMENTS:

- POWER RATING: 1 WATT.
- RESOLUTION: PER TABLE I.
- OPERATING TEMPERATURE RANGE: -65°C TO +125°C.
- ELECTRICAL ADJUSTMENT: 25 ± 5 TURNS.
- TORQUE: 8.0 OZ. IN. MAX.
- INSULATION RESISTANCE (500VDC): 100 MEGOHMS MIN.
- DIELECTRIC STRENGTH: 1000 VRMS, 60 CPS, 60 SEC.



DETAIL A

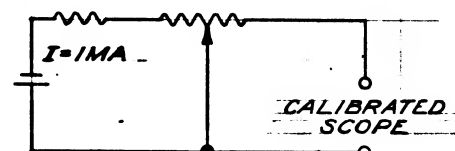
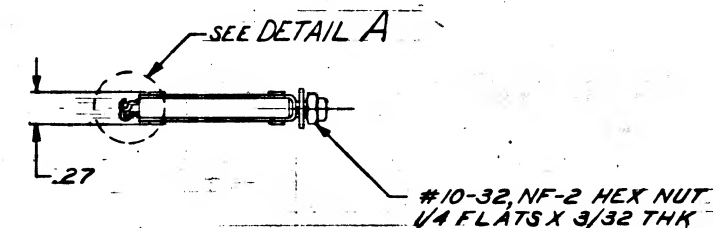
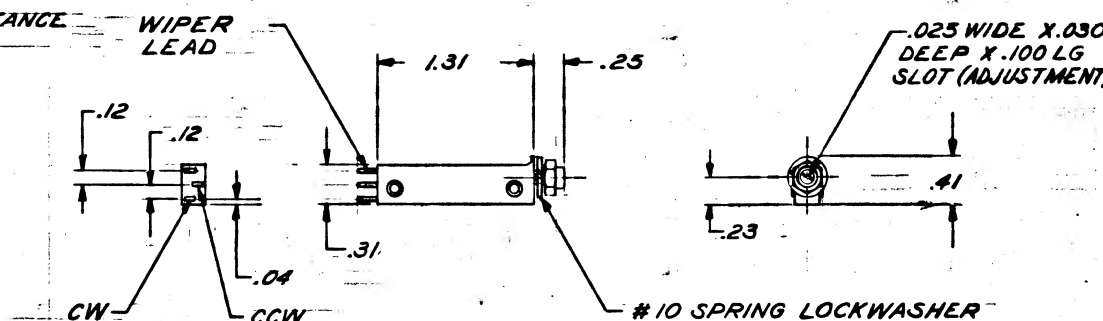


FIG. 1
EQUIVALENT NOISE RESISTANCE
MEASUREMENT



NASA PART NO.	RESISTANCE (OHMS) ±5%	NOMINAL RESOLUTION (PER CENT)
1016253-1	2K	0.4
1016253-2	10K	0.25

TABLE I



REPLACES REV A WITH CHANGES

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

QTY REQD		PART OR IDENTIFYING NO.		MATERIAL OR NOTES		NOMENCLATURE OR DESCRIPTION		FIND NO.		
LIST OF MATERIALS										
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS.					MANNED SPACECRAFT CENTER HOUSTON, TEXAS					
DRAWN <i>R. J. W.</i> 4/16/61					RESISTOR, VARIABLE					
CHECKED <i>B. J. W.</i> 2/2/61					WIREWOUND, 1 WATT					
APPROVED <i>B. J. W.</i> 2/2/61					SPECIFICATION CONTROL DRAWING					
APPROVED <i>M. Watson</i> 2/26/61										
APPROVED MIT <i>W. J. W.</i> 1/26/61					CODE IDENT NO.		SIZE		DRAWING NO.	
APPROVED MSC <i>L. C. W.</i> 4/3/61					80230		C		7016253	
DATE					SCALE NONE		SHEET 1		OF 1	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
CAPACITOR VALUES ARE IN μ F
RESISTOR VALUES ARE IN OHMS
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± .XX ± .01 ± .005 ±
DO NOT SCALE THIS DRAWING

MATERIAL

NEXT ASSY USED ON

APPLICATION

MASTER

- 8929101

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVAL

Bourns Inc., Riverside, California

DASH NUMBER	MANUFACTURER'S PART NUMBER	TOL.	VALUE
-1	224S-1-202M	5%	2K Ohms.
-2	224S-1-103M	5%	10K Ohms.

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 09634 DATE 5/27/64

PROCURE ONLY FROM APPROVED SOURCES
LISTED ON ND 1002034 FOR THIS DRAWING.

QTY. REQD.		NOMENCLATURE OR DESCRIPTION		PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTES	FIND NO.
LIST OF PARTS AND MATERIALS							
		UNLESS OTHERWISE SPECIFIED		MIT INSTRUMENTATION LAB CONTRACT		MIT INSTRUMENTATION LABORATORY CAMBRIDGE, MASS.	
		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES		NAS 9-153 DATE		DWS. NO.	
		DO NOT SCALE THIS DRAWING		APPROVED <u>W. J. R. 5-27-64</u> DATE <u>5/27/64</u>		MANNED SPACECRAFT CENTER HOUSTON TEXAS	
		MATERIAL:		DRAWN <u>W. J. R. 5-27-64</u>		NASA DRAWING NO. 1016253	
NEXT ASSY		USED ON		MIT/IL APPROVAL		SHEET OF	
APPLICATION				DATE <u>5/27/64</u>			



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REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
- SWITCHES SHALL BE CAPABLE OF MEETING THE REQUIREMENTS OF MIL-S-6743, EXCEPT AS, AND IN ADDITION TO THE REQUIREMENTS SPECIFIED BELOW.
- SUPPLIERS SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS CONTAINED IN ND 1015404, CLASS 3.
- UNITS SHALL BE CAPABLE OF MEETING THE QUALIFICATION REQUIREMENTS OF ND 1002055.
- MARKING: UNITS SHALL BE PERMANENTLY AND LEGIBLY MARKED, PER MIL-STD-130, WITH THE TERMINAL IDENTIFICATION. PACKAGES SHALL BE MARKED, PER MIL-STD-129, WITH THE MANUFACTURER'S NAME AND/OR SYMBOL, LOT CODE, DATE OF MANUFACTURE OR DATE CODE, AND NASA PART NUMBER (DRAWING NUMBER AND REVISION LETTER).

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- ACTUATING FORCE: 6 LBS MAX
- CONTACT ARRANGEMENT: 2 SPDT
- CONTACT PRESSURE: 60 GRAMS
- CONTACT GAP: .020 MAX
- DIMENSIONS

B. ELECTRICAL CHARACTERISTICS:

- DIELECTRIC WITHSTANDING VOLTAGE: 1000 VRMS, 60 CPS
- CONTACT VOLTAGE DROP: ONE MILLIVOLT MAX AT 100 MILLIAMPERES WHEN 2 TO 4 VDC IS APPLIED THRU A SUITABLE DROPPING RESISTOR.

3. DESIGN REQUIREMENTS:

- OPERATING LIFE (MIN): 100,000 CYCLES OF MECHANICAL OPERATION AND 50,000 CYCLES OF OPERATION WITH A RESISTIVE LOAD.
- CONSTRUCTION: BASIC SUBMINIATURE SNAP-ACTION SWITCH PERMANENTLY MOUNTED IN A PUSH BUTTON HOLDER.

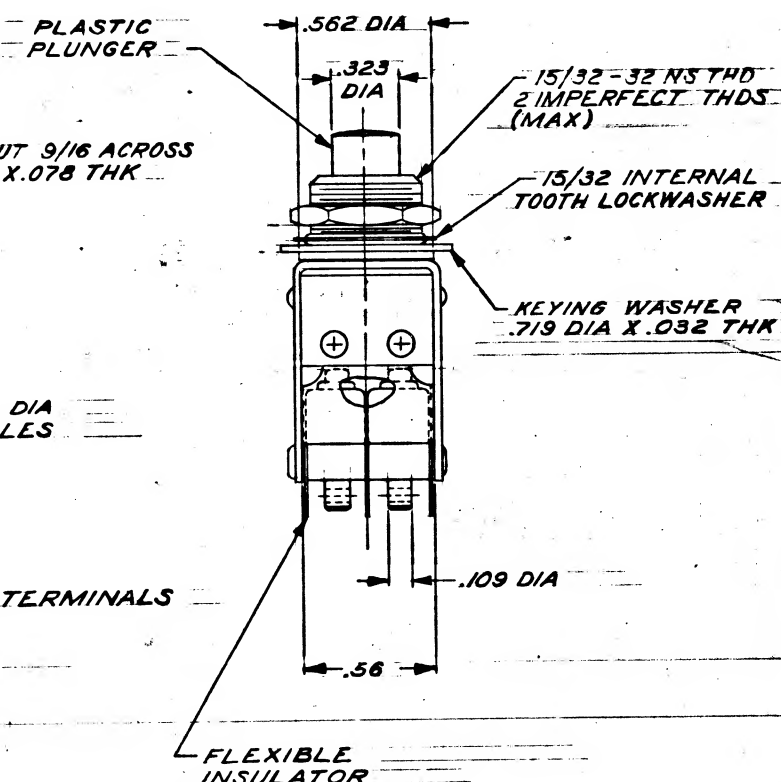
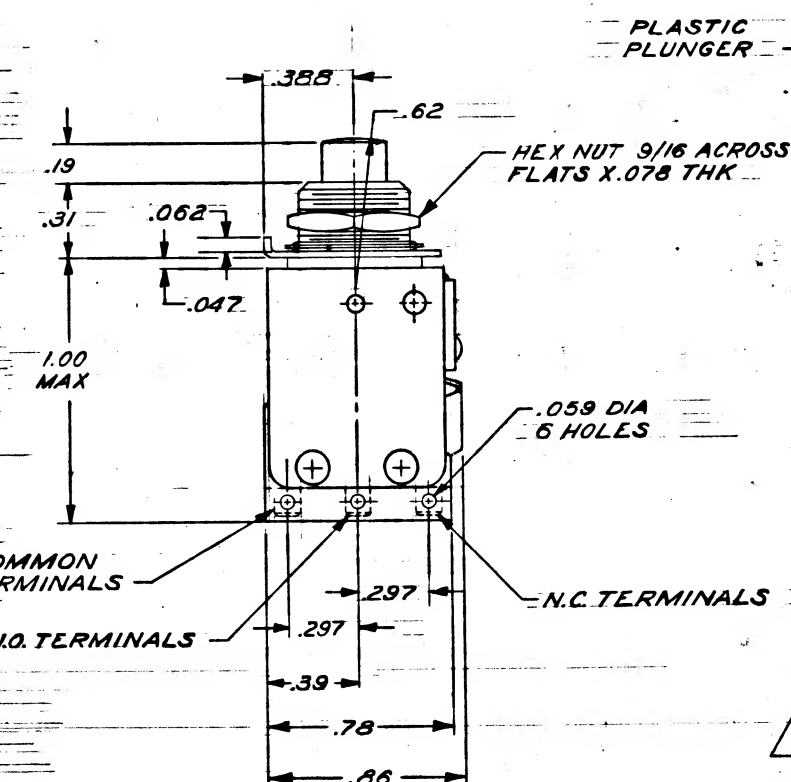
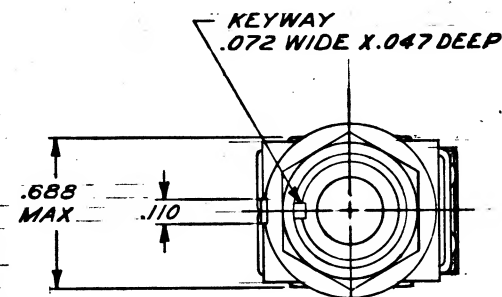
HOLDER MATERIAL: CORROSION-RESISTANT STEEL. TERMINAL MATERIAL: BRASS SUITABLY PLATED FOR SOLDERING. CONTACT MATERIAL: SILVER.

C. TERMINAL STRENGTH: CAPABLE OF WITHSTANDING A 5 POUND MIN AXIAL PULL.

D. STRENGTH OF ACTUATOR: 25 LBS MIN STEADY LOAD.

E. CONTACT RATINGS:

- 20 VDC
RESISTIVE LOAD: 4 AMPERES
INDUCTIVE LOAD: 25 AMPERES
- 125 VRMS
RESISTIVE LOAD: 5 AMPERES
- MAXIMUM INRUSH: 24 AMPERES



REPLACES REV A WITH CHANGES

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

MASTER

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES CAPACITOR VALUES ARE IN μ f RESISTOR VALUES ARE IN OHMS TOLERANCES ON FRACTIONS DECIMALS ANGLES $\pm .XX \pm .03$ $\pm .XXX \pm .010$ DO NOT SCALE THIS DRAWING
		MATERIAL
		<i>SEE REQUIREMENTS</i>
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS				
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS.		MANNED SPACECRAFT CENTER HOUSTON, TEXAS		
DRAWN	12/14/64	SWITCH, PUSHBUTTON ALTERNATE ACTION		
CHECKED	12/15/64			
APPROVED	12/16/64	SPECIFICATION CONTROL DRAWING		
APPROVED M I T	12/16/64	CODE IDENT NO.	SIZE	DRAWING NO.
APPROVED MSC	12/16/64	80230	C	1016254
DATE		SCALE NONE	SHEET 1 OF 1	

- 101254

REVISIONS			
ZONE	SYM	DESCRIPTION	DATE
APPROVAL			

Controls Co. of America, Folcroft, Pennsylvania
Micro Switch, Freeport, Illinois.

DASH NUMBER	MANUFACTURER'S PART NUMBER	SWITCHING ACTION
-1	A4-87/E4-103	SPDT
-2	2PB-11-T2	DPDT

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 09634 DATE 5/27/64

PROCURE ONLY FROM APPROVED SOURCES
LISTED ON ND 1002034 FOR THIS DRAWING.

QTY. REQD.	NOMENCLATURE OR DESCRIPTION	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTES	FIND NO.
LIST OF PARTS AND MATERIALS					
MIT INSTRUMENTATION LAB CONTRACT NAS 9-153			MIT INSTRUMENTATION LABORATORY CAMBRIDGE, MASS.		
APPROVED <u>W. J. Rhine</u> DATE <u>5/27/64</u>			DWG. NO.		
CHECKED <u>W. J. Rhine</u> DATE <u>5/27/64</u>			MANNED SPACECRAFT CENTER HOUSTON TEXAS		
DRAWN <u>W. J. Rhine</u> DATE <u>5/27/64</u>			NASA DRAWING NO. 101254		
APPROVED FOR MSC <u>W. J. Rhine</u> DATE <u>5/27/64</u>			SHEET OF		
MIT/IL APPROVAL					
DATE					
UNLESS OTHERWISE SPECIFIED			SWITCH, PUSHBUTTON		
DIMENSIONS ARE IN INCHES			Specification Control Drawing		
TOLERANCES ON			SCALE		
FRACTIONS DECIMALS ANGLES			UNIT WT.		
DO NOT SCALE THIS DRAWING			CODE IDENT.		
MATERIAL:					
NEXT ASSY					
USED ON					
APPLICATION					



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFERRING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REVISIONS					
SYM	ZONE	DESCRIPTION	DR	CHK	DATE
B		REPLACES REV A WITH CHANGES PER TDR 18188	RJN	W	

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. ELECTRICAL REQUIREMENTS:

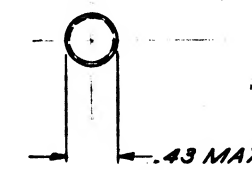
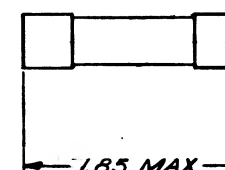
- FLASH RATE: 80 ± 20 FPM AT 0.05 AMP LOAD.
- ON-TO-OFF RATIO: 1 TO 1 $\pm 15\%$ AT 0.05 AMP LOAD.
- INPUT VOLTAGE: 115VAC $\pm 10\%$, 60 CPS.

B. MECHANICAL REQUIREMENTS:

- MARKING: PARTS SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME OR SYMBOL, PART NO. PER MIL-STD-130.

3. DESIGN REQUIREMENTS:

- OUTPUT RATING: 0.05 AMP (1-6 WATT LAMP)
- LIFE: 10,000 HR AT RATED LOAD, MIN.
- MOUNTING POSITION: ANY
- DUTY: CONTINUOUS OR INTERMITTENT
- STARTING TIME: 5 SEC MAX AT NORMAL CONDITIONS



PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND1002034 FOR THIS DRAWING.

MASTER

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES CAPACITOR VALUES ARE IN μ f RESISTOR VALUES ARE IN OHMS TOLERANCES ON FRACTIONS DECIMALS ANGLES $\pm .75$ $\pm .75$ $\pm .75$ DO NOT SCALE THIS DRAWING
		MATERIAL
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	MATERIAL OR NOTES	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS				
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS.		MANNED SPACECRAFT CENTER HOUSTON, TEXAS		
DRAWN	<i>R. J. J.</i>	<i>11/2/60</i>	FLASHER, WARNING	
CHECKED	<i>R. J. J.</i>	<i>2/5/61</i>		
APPROVED	<i>R. J. J.</i>	<i>2/5/61</i>	SPECIFICATION CONTROL DRAWING	
APPROVED	<i>R. J. J.</i>	<i>2/5/61</i>		
APPROVED MIT	<i>W. J. J.</i>	<i>13/6/61</i>	CODE IDENT NO.	SIZE
APPROVED MSC	<i>R. J. J.</i>	<i>7/4/61</i>	80230	C
		DATE	SCALE NONE	SHEET 1 OF 1

DRAWING NO. 1016255

- 9929101

REVISIONS				
ZONE	SYM	DESCRIPTION	DATE	APPROVAL

Tung-Sol Electro, Newark, New Jersey

MANUFACTURER'S PART NUMBER 608

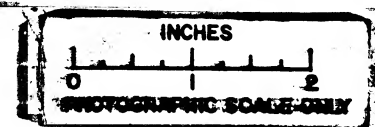
FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 09634 DATE

5/27/64

PROCURE ONLY FROM APPROVED SOURCES
LISTED ON ND 1002034 FOR THIS DRAWING.

QTY. REQD.	NOMENCLATURE OR DESCRIPTION	PART OR IDENTIFYING NO.	SPECIFICATION	MATERIAL OR NOTES	FIND NO.
LIST OF PARTS AND MATERIALS					
UNLESS OTHERWISE SPECIFIED		MIT INSTRUMENTATION LAB CONTRACT NAS 9-153		MIT INSTRUMENTATION LABORATORY CAMBRIDGE, MASS.	
DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES		DATE 5/27/64		DWS. NO.	
DO NOT SCALE THIS DRAWING		DRAWN V. Pagan 5/27/64		MANNED SPACECRAFT CENTER HOUSTON TEXAS	
MATERIAL:		APPROVED FOR MSC W. J. Pagan 5-27-64		NASA DRAWING NO. 1016255	
NEXT ASSY	USED ON	MIT/IL APPROVAL	DATE	SHEET OF	
APPLICATION		W. J. Pagan 5/27/64			



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

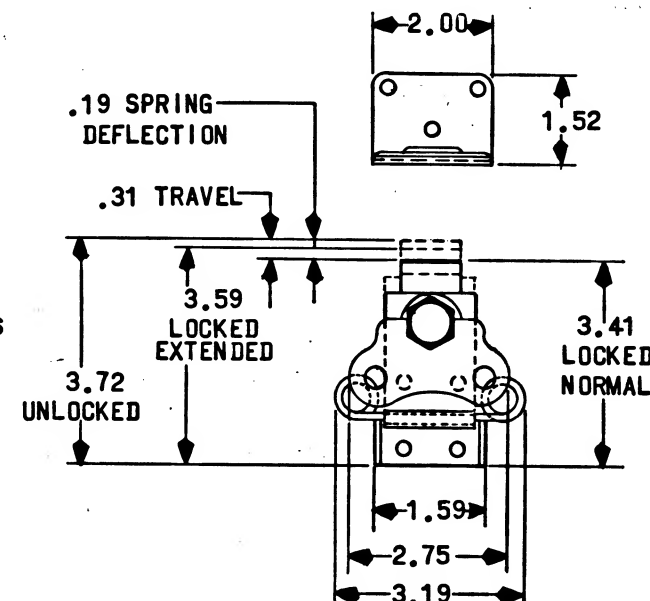
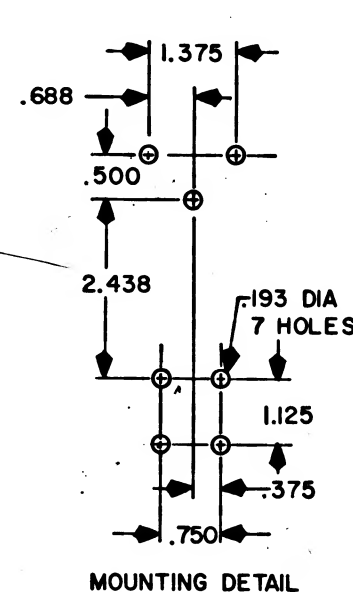
2. INSPECTION AND ACCEPTANCE:

- MATERIAL: STEEL
- FINISH: CADMIUM PLATE PER QQ-P-416A, TYPE 2, CLASS 2 (CLEAR CHROMATE DIPPED)
- DIMENSIONS: AS SHOWN
- MARKING:
 - PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME,
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER,
DATE CODE, OR DATE OF MANUFACTURE.
 - MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

3. DESIGN INFORMATION:

- LOAD CARRYING CAPACITY: 1000 LB. TENSION
- PRELOADING: 450 LB PULL DOWN PRESSURE
- 180° TURN TO OPEN OR CLOSE LOCK.

NASA PART NUMBER	PART DESCRIPTION	SIMMONS PART NUMBER
1016258-001	CATCH AND STRIKE ASSEMBLY	TO BE
-002	CATCH	ASSIGNED
-003	STRIKE	



FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 04817 DATE 26 NOV 63

REPLACED WITH CHANGE BY REV "B"

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. CONTRACT NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>[Signature]</i> DATE <i>11/26/63</i> CHECKED <i>Wilson</i> 15 NOV 63 APPROVAL <i>[Signature]</i> 15 NOV 63 APPROVAL <i>[Signature]</i> 11/22/63		FASTENER-SPRING LOADED LINK LOCK (NO. 2)	
SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		CODE IDENT NO.	NASA DRAWING NO.
FINAL FINISH NONE		C	1016258
APPLICATION		SCALE NONE	WT
		SHEET 1 OF 1	

PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING.

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFERRING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

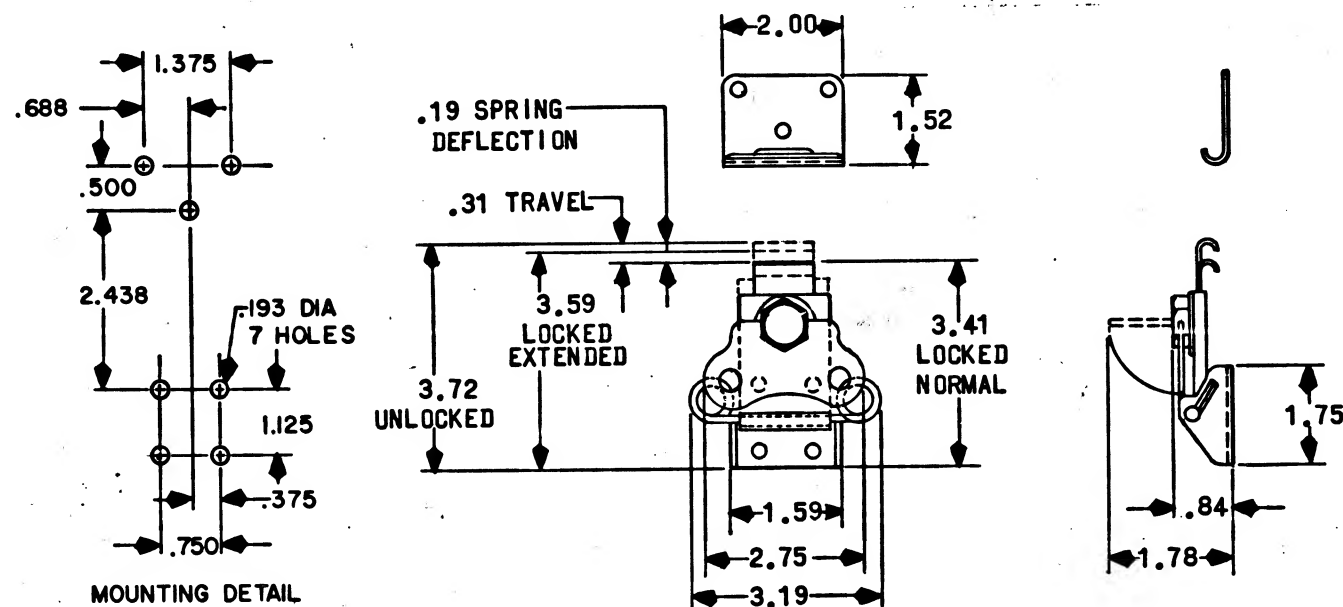
2. INSPECTION AND ACCEPTANCE:

- MATERIAL: STEEL
- FINISH: CADMIUM PLATE PER QQ-P-416A, TYPE 2, CLASS 2 (CLEAR CHROMATE DIPPED)
- DIMENSIONS: AS SHOWN
- MARKING:
 - PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME.
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
DATE CODE, OR DATE OF MANUFACTURE.
 - MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

3. DESIGN INFORMATION:

- LOAD CARRYING CAPACITY: 1000 LB. TENSION
- PRELOADING: 450 LB PULL DOWN PRESSURE
- 180° TURN TO OPEN OR CLOSE LOCK.

NASA PART NUMBER	PART DESCRIPTION	SIMMONS PART NUMBER
1016258-001	CATCH AND STRIKE ASSEMBLY	TO BE
-002	CATCH	ASSIGNED
-003	STRIKE	

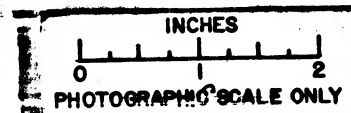


PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

MASTER

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± .02 ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		NONE
NEXT ASSY	USED ON	
		APPLICATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
		LIST OF MATERIALS	
	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Contract NAS 9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
	DRAWN <i>B. B. B.</i> DATE <i>11/26/63</i> CHECKED <i>W. Wilson</i> <i>15 Nov 63</i> APPROVAL <i>B. B. B.</i> <i>15 Nov 63</i> APPROVAL <i>L. Johnson</i> <i>4/22/63</i>	FASTENER-SPRING LOADED LINK LOCK (NO. 2)	
	NASA APPROVAL <i>W. J. B.</i> <i>11/26-63</i> MIT APPROVAL <i>W. J. B.</i> <i>11/26/63</i>	SPECIFICATION CONTROL DRAWING	
		CODE IDENT NO. SIZE C	NASA DRAWING NO. 1016258
		SCALE NONE WT	SHEET 1 OF 1



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.

~~B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.~~

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

- a. SCREW: STAINLESS STEEL, TYPE 303 PER QQ-S-763
b. STANDOFF: STAINLESS STEEL, TYPE 303 PER QQ-S-763

(2) FINISH: PASSIVATE PER MIL-F-14072, E300.

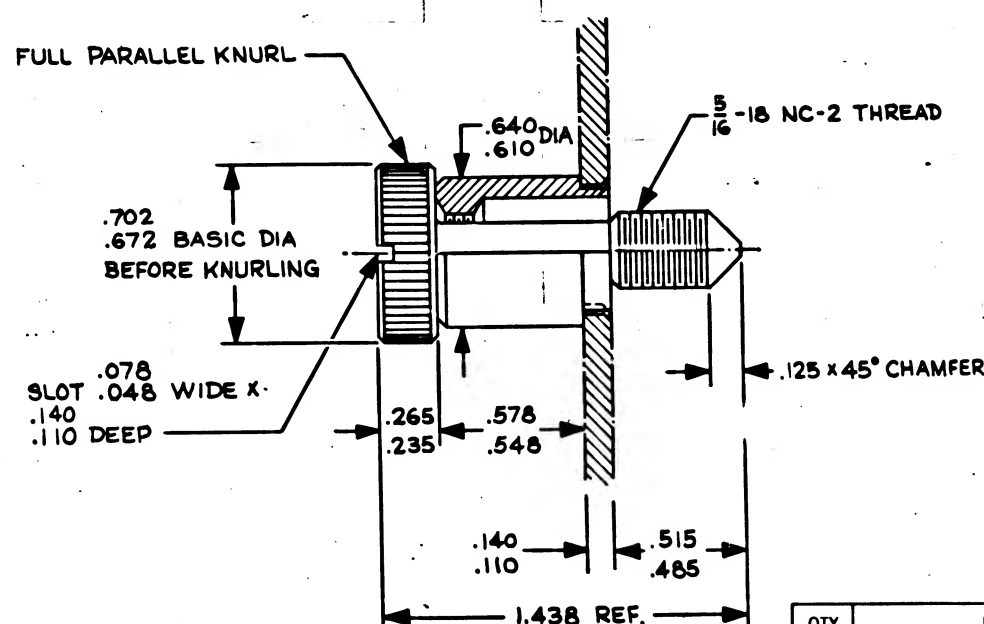
(3) DIMENSIONS: AS SHOWN ON PICTURE.

(4) MARKING:

- a. PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION PER MIL-STD-129:
SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
DATE CODE, OR DATE OF MANUFACTURE.
- b. MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE PER ND1002019.

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05146 DATE 10 DEC 63



THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

PART DESCRIPTION	NASA DASH NUMBER	MFR'S PART NUMBER
ASSEMBLY	-001	54-99-154-24
SCREW	-101	58-99-552-24
STANDOFF	-201	58-99-553-24

NOTE:

I. FASTENER ASSEMBLY -001 WILL BE SHIPPED UNASSEMBLED.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± ± ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		NONE
NEXT ASSY	USED ON	
		APPLICATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>J. Sullivan</i> DATE <i>25 Nov 63</i> CHECKED <i>E. Foster</i> <i>26 Nov 63</i> APPROVAL <i>R. K. Parnell</i> <i>26 Nov 63</i> APPROVAL <i>L. J. Gorman</i> <i>12/9/63</i>		FASTENER - SCREW, RETRACTABLE	
NASA APPROVAL <i>W. S. ...</i> <i>12/10/63</i> MIT APPROVAL <i>W. S. ...</i> <i>10 Dec 63</i>		CODE IDENT NO.	NASA DRAWING NO.
		C	1016260
		SCALE NONE	WT
		SHEET 1 OF 1	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REQUIREMENTS:

1. GENERAL:

A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.

~~B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.~~

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

- a. SCREW: STAINLESS STEEL, TYPE 303 PER QQ-S-763
- b. STANDOFF: STAINLESS STEEL, TYPE 303 PER QQ-S-763

(2) FINISH: PASSIVATE PER MIL-F-14072, E300.

(3) DIMENSIONS: AS SHOWN ON PICTURE.

(4) MARKING:

- a. PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION PER MIL-STD-129:
SUPPLIER'S NAME
NASA PART NUMBER

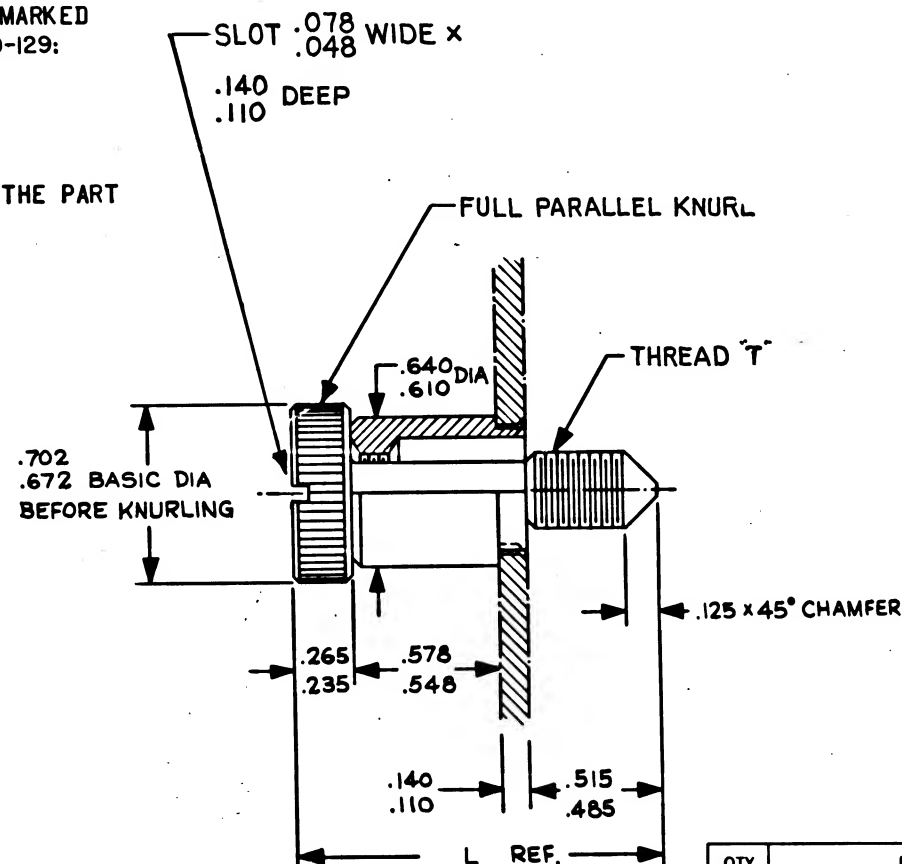
- b. MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE PER ND1002019.

PART DESCRIPTION	NASA DASH NUMBER	MFR'S PART NUMBER	L REF	THREAD T
ASSEMBLY	-001	54-99-154-24	1.438	5/16-18UNC-2A
SCREW	-101	58-99-552-24	1.438	5/16-18UNC-2A
STANDOFF	-201	58-99-553-24	-	5/16-18UNC-2A
ASSEMBLY	-002	TO BE ASSIGNED	1.625	5/16-24UNF-2A

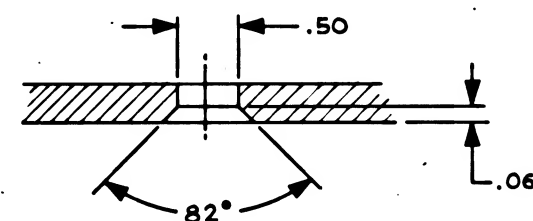
NOTE:

I. FASTENER ASSEMBLIES -001 & -002 WILL BE SHIPPED UNASSEMBLED.

PROCURE ONLY FROM SOURCES LISTED ON THE CONTRACTORS ACCEPTABLE SUPPLIERS LIST FOR THIS DRAWING.



PANEL PREPARATION REF.



THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
AC ELECTRONICS DIVISION GENERAL MOTORS CORP. MILWAUKEE WIS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Michaelson</i> DATE 25 Nov 63 CHECKED <i>Ed Foster</i> 26 Nov 63 APPROVAL <i>R. K. Parnell</i> 26 Nov 63 APPROVAL <i>L. J. Johnson</i> 12/9/63		FASTENER - SCREW, RETRACTABLE	
NASA APPROVAL <i>W. J. Springer</i> 12/11/63 MIT APPROVAL <i>W. J. Springer</i> 10/26/63		SPECIFICATION CONTROL DRAWING	
CODE IDENT NO. 99974		SIZE C	NASA DRAWING NO. 1016260
SCALE NONE		WT	SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

0929101

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

- SCREW: STAINLESS STEEL, TYPE 303 PER QQ-S-736
- STANDOFF: STAINLESS STEEL, TYPE 305 PER A.M.S. 5514-A

(2) FINISH: PASSIVATE PER MIL-F-14072, E300.

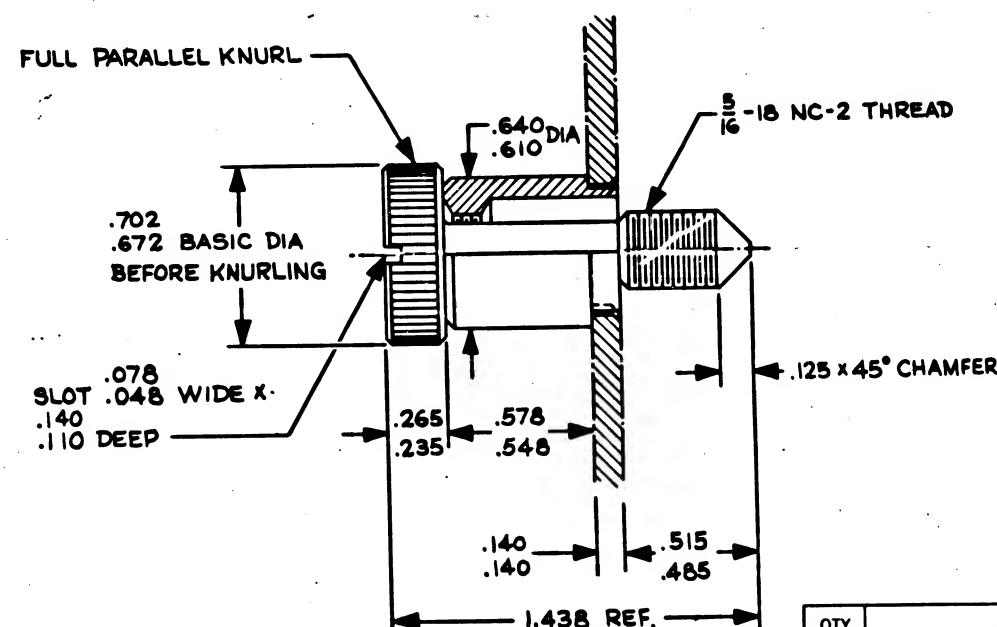
(3) DIMENSIONS: AS SHOWN ON PICTURE.

(4) MARKING:

- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
DATE CODE, OR DATE OF MANUFACTURE.
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05146 DATE 10 DEC 63



PANEL PREPARATION REF.

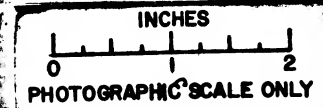
THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

PART DESCRIPTION	NASA DASH NUMBER	MFR'S PART NUMBER
ASSEMBLY	-001	54-99-154-24
SCREW	-101	58-99-552-24
STANDOFF	-201	58-99-553-24

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± ± ±
DO NOT SCALE THIS DRAWING
MATERIAL
SEE REQUIREMENTS
HEAT TREATMENT
NONE
FINAL FINISH
NONE
NEXT ASSY USED ON APPLICATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS CONTRACT NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>J. Sullivan</i> DATE 25 Nov 63 CHECKED <i>E. Foster</i> 26 Nov 63 APPROVAL <i>L. K. Parnell</i> 26 Nov 63 APPROVAL <i>L. J. Gorman</i> 12/19/63		FASTENER - SCREW, RETRACTABLE	
NASA APPROVAL <i>W. J. King</i> 12/10/63 MIT APPROVAL <i>W. King</i> 10 Dec 63		SPECIFICATION CONTROL DRAWING	
		CODE IDENT NO. SIZE	NASA DRAWING NO.
		C	1016260
		SCALE NONE WT	SHEET 1 OF 1



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCLUDES NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

1929101

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 10928	22 JUL 69	JWP

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

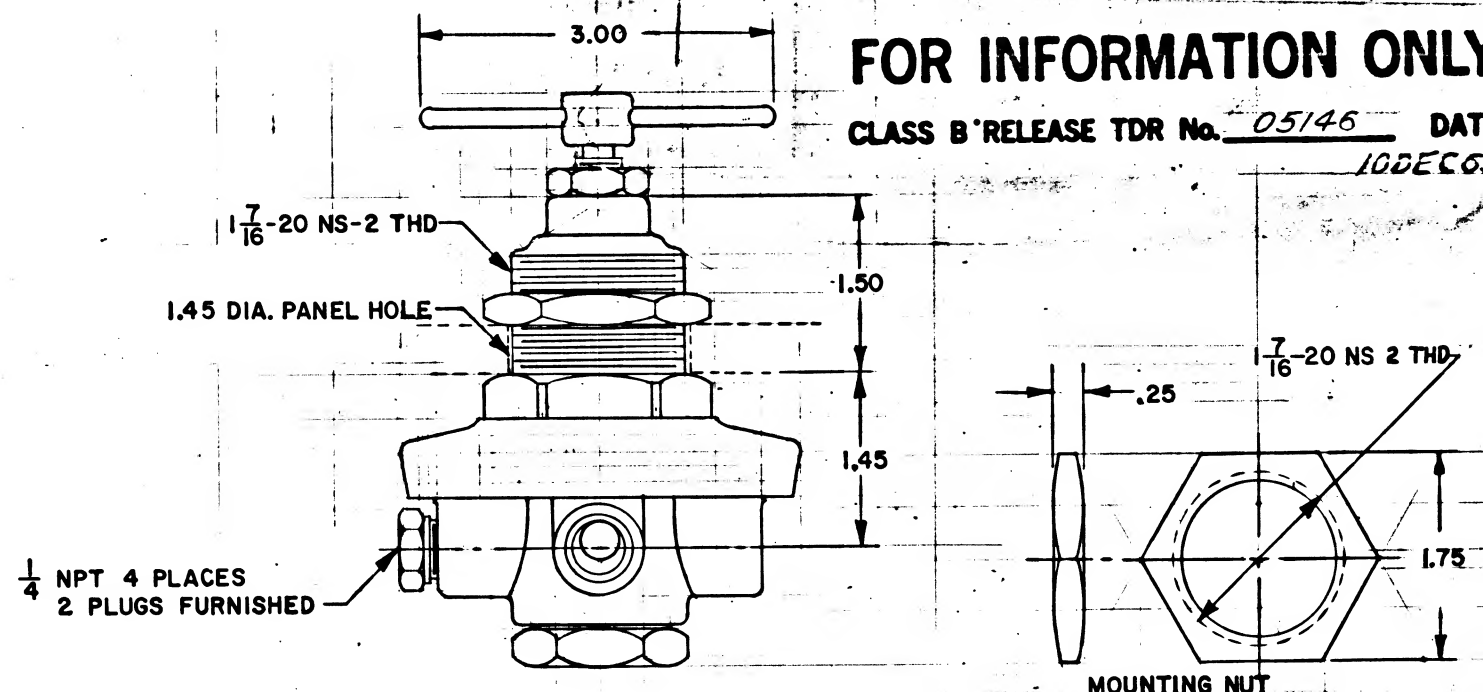
(1) MATERIAL:

- WETTED METAL PARTS: STAINLESS STEEL, TYPE 316
- BONNET: ALUMINUM ALLOY, 2024-T4
- SEAT AND DIAPHRAGM: TEFLON
- "O" RINGS: VITON

(2) FINISH: STAINLESS STEEL: PASSIVATE ALUMINUM: ANODIZE

(3) MARKING:

- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME.
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
DATE CODE, OR DATE OF MANUFACTURE.
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE



THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

NASA PART NUMBER	CONNECTIONS 1 INLET 3 OUTLET	TYPE MOUNTING	MAX DEL. PRESSURE (PSIG)	MAX FLOW (SCFH AIR)	MAX INLET PRESSURE (PSIG)	MFG'S PART NUMBER
-001	1/4 NPT FEM.	PANEL	125	1800	500	61113-0
-002	1/4 NPT FEM.	PANEL	40	700	500	61112-0
-003	NUT, MOUNTING					660-17

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± .XXX ± .005 ±
DO NOT SCALE THIS DRAWING
MATERIAL
SEE REQUIREMENTS
HEAT TREATMENT
FINAL FINISH
NONE
NONE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT, CENTER HOUSTON, TEXAS	
DRAWN <i>J. Parks</i> DATE 25 NOV 63		REGULATOR, GAS PRESSURE	
CHECKED <i>Ed Foster</i> 27 Nov 63		SPECIFICATION CONTROL DRAWING	
APPROVAL <i>L. Giedeman</i> 10/9/63		NASA DRAWING NO. 1016261	
NASA APPROVAL <i>W. D. ...</i>		CODE IDENT NO. C	SIZE
MIT APPROVAL <i>W. D. ...</i>		SCALE NONE	WT
		SHEET 1 OF 1	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN MIL-Q-9858

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

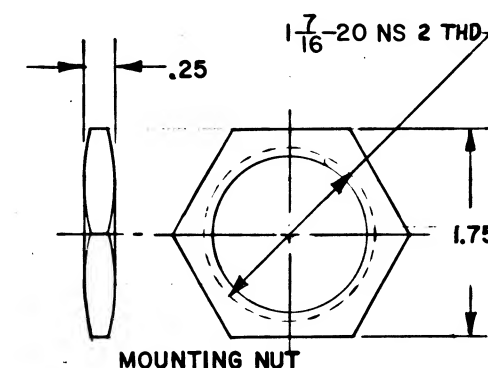
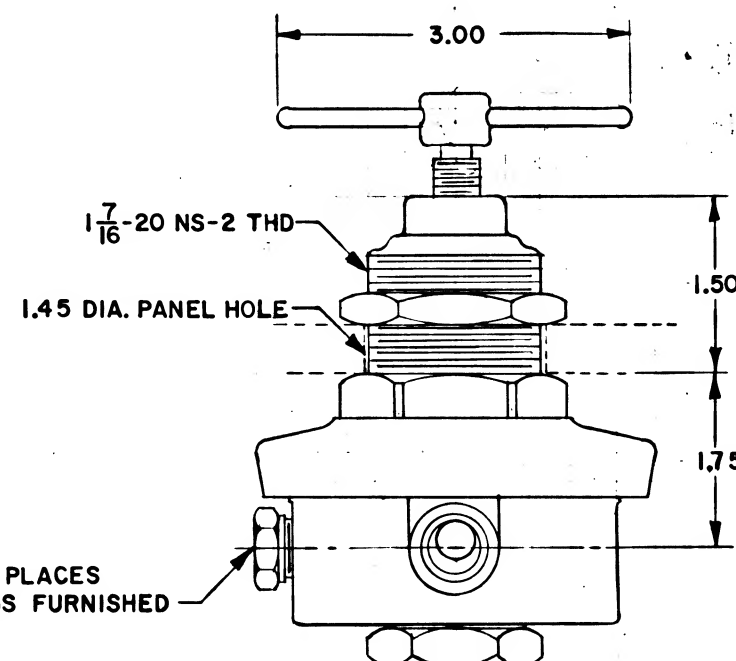
(1) MATERIAL:

- WETTED METAL PARTS: STAINLESS STEEL, TYPE 316
- BONNET: ALUMINUM ALLOY, 2024-T4
- SEAT AND DIAPHRAGM: TEFLON
- "O" RINGS: VITON

(2) FINISH: STAINLESS STEEL: PASSIVATE ALUMINUM: PALADIN

(3) MARKING:

- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME.
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
DATE CODE, OR DATE OF MANUFACTURE.
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE



MOUNTING NUT

THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

NASA PART NUMBER	CONNECTIONS 1 INLET 3 OUTLET	TYPE MOUNTING	MAX DEL. PRESSURE (PSIG)	MAX FLOW (SCFH AIR)	MAX INLET PRESSURE (PSIG)	MFG'S PART NUMBER
-001	1/4 NPT FEM.	PANEL	125	1800	500	61113-0
-002	1/4 NPT FEM.	PANEL	40	700	500	61112-0
-003	NUT, MOUNTING					660-17

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± .XXX±.005 ±
± .XX±.02
DO NOT SCALE THIS DRAWING
MATERIAL
SEE REQUIREMENTS
HEAT TREATMENT
NONE
FINAL FINISH
NONE

NEXT ASSY USED ON APPLICATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>J. Banks</i> DATE 15 NOV 63 CHECKED <i>Ed Foster</i> 27 Nov 63 APPROVAL <i>L. K. Parnas</i> 22 Nov 63 APPROVAL <i>L. Gediman</i> 17/9/63		REGULATOR, GAS PRESSURE	
NASA APPROVAL <i>L. D. Davis</i> 12/1/65 MIT APPROVAL <i>W. H. Pappas</i> 10/1/63		SPECIFICATION CONTROL DRAWING	
CODE IDENT NO.	SIZE	NASA DRAWING NO.	
99974	C	1016261	
SCALE NONE	WT	SHEET 1 OF 1	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

- WETTED METAL PARTS: STAINLESS STEEL, TYPE 316
- BONNET: ALUMINUM ALLOY, 2024-T4
- SEAT AND DIAPHRAGM: TEFLON
- "O" RINGS: VITON

(2) FINISH: STAINLESS STEEL: PASSIVATE ALUMINUM: ANODIZE

(3) MARKING:

- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME.
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
DATE CODE, OR DATE OF MANUFACTURE.
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE

1929101

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05146 DATE 10 DEC 63

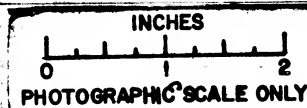
NASA PART NUMBER	CONNECTIONS 1 INLET 3 OUTLET	TYPE MOUNTING	MAX DEL. PRESSURE (PSIG)	MAX FLOW (SCFH AIR)	MAX INLET PRESSURE (PSIG)	MFG'S PART NUMBER
-001	1/4 NPT FEM.	PANEL	125	1800	500	61113-0
-002	1/4 NPT FEM.	PANEL	40	700	500	61112-0

THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON	
FRACTIONS	DECIMALS ANGLES
±	± ±
DO NOT SCALE THIS DRAWING	
MATERIAL	
SEE REQUIREMENTS	
HEAT TREATMENT	
NONE	
FINAL FINISH	
NONE	
NEXT ASSY	USED ON
APPLICATION	

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>J. Banks</i> DATE <i>25 NOV 63</i>		REGULATOR, GAS PRESSURE	
CHECKED <i>Ed Foster</i> 27 Nov 63		SPECIFICATION CONTROL DRAWING	
APPROVAL <i>L. K. Johnson</i> 22 Nov 63		NASA DRAWING NO. 1016261	
APPROVAL <i>L. G. Johnson</i> 17/1/63		CODE IDENT NO.	SIZE
NASA APPROVAL <i>L. S. Johnson</i> 12/1/63			C
MIT APPROVAL <i>W. J. Johnson</i> 10/1/63		SCALE NONE	WT
		SHEET 1 OF 1	



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER. ANY FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFIRMING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

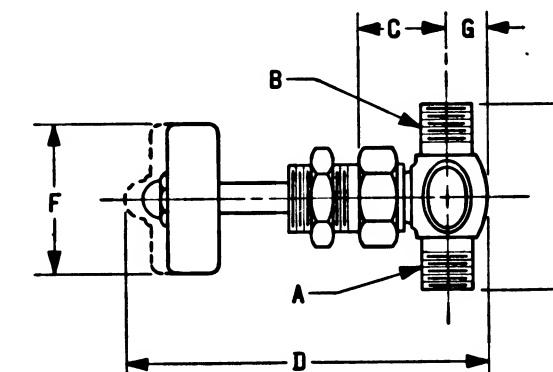
1. GENERAL:
 - A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
 - B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN MIL-Q-9858.
2. INSPECTION AND ACCEPTANCE:
 - A. MECHANICAL REQUIREMENTS:
 - (1) MATERIAL:
 - a. BODY AND STEM: STAINLESS STEEL, TYPE 303
 - b. PACKING: TEFLON
 - c. STEM TIP: KEL-F
 - (2) FINISH:
 - a. STAINLESS STEEL: PASSIVATE
 - b. EXPOSED UPPER PARTS: NICKEL PLATE
 - (3) DIMENSIONS: AS SHOWN.
 - (4) MARKING:
 - a. PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
 - b. PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME.
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
DATE CODE, OR DATE OF MANUFACTURE.
 - c. MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.
3. DESIGN INFORMATION:
 - A. TEMPERATURE RANGE: -60°F TO +450°F
 - B. PANEL HOLE REQUIRED: .640

NASA DASH NUMBER	TYPE	A NPT SIZE	B NPT SIZE	C	D	E	F	G	STEM TIP	ORIFICE	MAX OPERATING PRESSURE (PSI)	MFR'S PART NUMBER
-001	PANEL MOUNT	1/8 FEM.	1/8 FEM.	.84	3.22	1.75	1.25	.39	BLUNT	.170	3000	D 334K
-002		1/4 MALE	1/4 MALE	.84	3.22	1.75	1.25	.39	BLUNT	.170	3000	D 328K
-003		1/4 FEM.	1/4 FEM.	1.00	3.75	1.88	2.13	.47	BLUNT	.219	3000	DS380K

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
FRACTIONS	DECIMALS	ANGLES
±	±.005	±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		NONE
NEXT ASSY	USED ON	
		APPLICATION

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED & UPGRADED TO CLASS A PER TDRR-17203	15-MAR-65	B. EF



THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Bender</i> 26-NOV-63 CHECKED <i>Ed Foster</i> 27 Nov 63 APPROVAL <i>L. K. Jones</i> 27 Nov 63 APPROVAL <i>C. J. Johnson</i> 12/9/63		VALVE, NEEDLE, MINATURE (GLOBE PATTERN)	
NASA APPROVAL <i>W. C. Johnson</i> 12/10/63 MIT APPROVAL <i>W. C. Johnson</i> 12/10/63		CODE IDENT NO. SIZE C	NASA DRAWING NO. 1016262
SCALE NONE		WT	SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON, OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO REPRODUCE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREIN.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

- BODY AND STEM: STAINLESS STEEL, TYPE 303
- PACKING: TEFLON
- STEM TIP: KEL-F

(2) FINISH:

- STAINLESS STEEL: PASSIVATE
- EXPOSED UPPER PARTS: NICKEL PLATE

(3) DIMENSIONS: AS SHOWN.

(4) MARKING:

- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME.
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
DATE CODE, OR DATE OF MANUFACTURE.
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

3. DESIGN INFORMATION:

- TEMPERATURE RANGE: -60°F TO +450°F
- PANEL HOLE REQUIRED: .640

NASA DASH NUMBER	TYPE	A NPT SIZE	B NPT SIZE	C	D	E	F	G	STEM TIP	ORIFICE	MAX OPERATING PRESSURE (PSI)	MFR'S PART NUMBER
-001	PANEL MOUNT	1/8 FEM.	1/8 FEM.	.84	3.22	1.75	1.25	.39	BLUNT	.170	3000	D 334K
-002		1/4 MALE	1/4 MALE	.84	3.22	1.75	1.25	.39	BLUNT	.170	3000	D 328K
-003		1/4 FEM.	1/4 FEM.	1.00	3.75	1.88	2.13	.47	BLUNT	.219	3000	DS380K

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

MASTED

APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± .005 ±
DO NOT SCALE THIS DRAWING
MATERIAL
SEE REQUIREMENTS
HEAT TREATMENT
NONE
FINAL FINISH
NONE

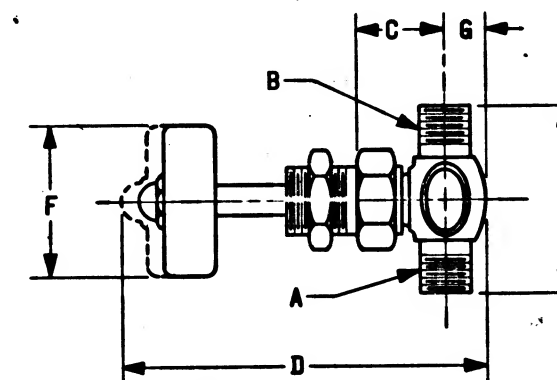
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Bender</i> DATE <i>28 Nov 63</i> CHECKED <i>Ed Foster</i> DATE <i>27 Nov 63</i> APPROVAL <i>E. J. Gorman</i> DATE <i>27 Nov 63</i> APPROVAL <i>E. J. Gorman</i> DATE <i>27 Nov 63</i>		VALVE, NEEDLE, MINATURE (GLOBE PATTERN)	
NASA APPROVAL <i>W. J. Gorman</i> DATE <i>12/1/63</i> MIT APPROVAL <i>W. J. Gorman</i> DATE <i>12/1/63</i>		SPECIFICATION CONTROL DRAWING	
CODE IDENT NO.		SIZE	NASA DRAWING NO.
SCALE NONE		C	1016262
WT		SHEET 1 OF 1	

2929101

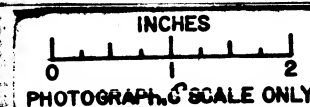
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05146 DATE 10 DEC 63



THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.

B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. ACCURACY: 1/4 OF 1% OF SCALE RANGE.

B. MARKING:

(1) PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.

(2) PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:

SUPPLIER'S NAME.

NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.

SUPPLIER'S LOT OR SERIAL NUMBER.

DATE CODE, OR DATE OF MANUFACTURE.

(3) MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

929101

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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NASA DASH NUMBER	MANUFACTURER'S PART NUMBER				DIAL MARKING	
	DIAL SIZE	RANGE	CONN. & MTG.	FIG.	FIGURE INTERVAL	MINOR SUB. DIV.
-001	4-1/2	0-15	PSIG	1/4 LBM	1402	1 PSIG
-002		0-30				.1
-003		0-60				.2
-004		0-100				.5
-005		0-160				1.0
-006		0-200				1.0
-007		0-300				1.0
-008		0-400				2.0
-009		0-600				2.0
-010		0-800				5.0
-011		0-1000				5.0
-101	6	0-15				.05
-102		0-30				.1
-103		0-60				.2
-104		0-100				.5
-105		0-160				1.0
-106		0-200				1.0
-107		0-300				1.0
-108		0-400				2.0
-109		0-600				2.0
-110		0-800				5.0
-111		0-1000				5.0
-201	8-1/2	0-15				.05
-202		0-30				.1
-203		0-60				.2
-204		0-100				.5
-205		0-160				1.0
-206		0-200				1.0
-207		0-300				1.0
-208		0-400				2.0
-209		0-600				2.0
-210		0-800				5.0
-211		0-1000				5.0

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05146 DATE 12 DEC 63

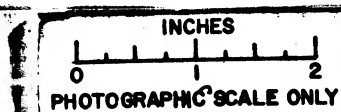
THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

POSTER

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± ± ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
NEXT ASSY	USED ON	FINAL FINISH
		NONE
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIG NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>J. Parke</i> DATE 27 NOV 63		GAGE, TEST FLUID PRESSURE	
CHECKED <i>Ed Foster</i> 29 NOV 63		SPECIFICATION CONTROL DRAWING	
APPROVAL <i>J.W. Wynn</i> 29 NOV 63		CODE IDENT NO.	SIZE
APPROVAL <i>L. Goldman</i> 12/10/63			C
NASA APPROVAL <i>J. J. [Signature]</i> 12/10/63		NASA DRAWING NO. 1016263	
MIT APPROVAL <i>W. K. [Signature]</i>		SCALE NONE	WT
		SHEET 1 OF 1	



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN MIL-Q-9858.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

- BODY: 316 SS
- GASKET: TEFLON
- FILTER ELEMENT: SINTERED 316 SS

(2) CONNECTIONS: 1/4 NPT (FEMALE)

3. DESIGN REQUIREMENTS:

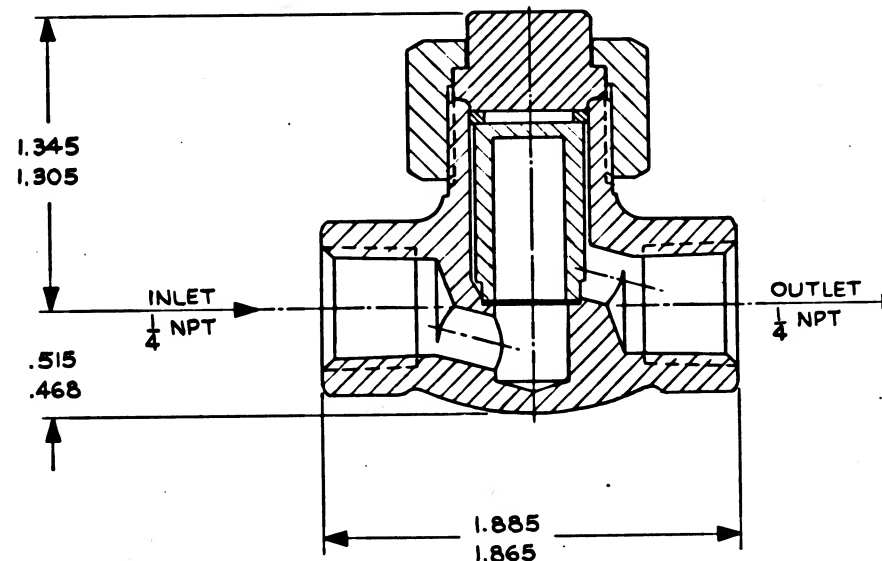
- TEMPERATURE RANGE (°F) -60 TO 450
- MAXIMUM OPERATING PRESS (AT ROOM TEMP.) 5000 PSI

C. MARKING:

- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
DATE CODE, OR DATE OF MANUFACTURE.
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

NASA DASH NUMBER	MANUFACTURER'S PART NUMBER				RANGE MICRONS
	FILTER ASSY	ELEMENT	GASKET		
LOWER			UPPER		
-001	60302-1				2-5
-002	60302-2				5-9
-003	60302-3				10-15
-004	60302-4				20-30
-005	60302-5				40-55
-006		2231 (1)			2-5
-007		2232 (2)			5-9
-008		2233 (3)			10-15
-009		2234 (4)			20-30
-010		2235 (5)			40-55
-011			541-7		
-012				90349-1	

PROCURE ONLY FROM SOURCES LISTED ON CONTRACTOR'S ACCEPTABLE SUPPLIER LIST FOR THIS DRAWING.

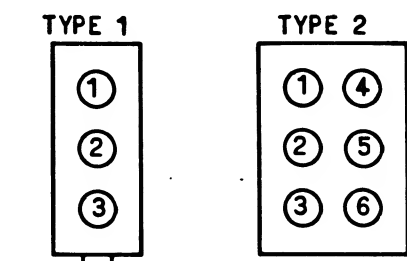


THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER

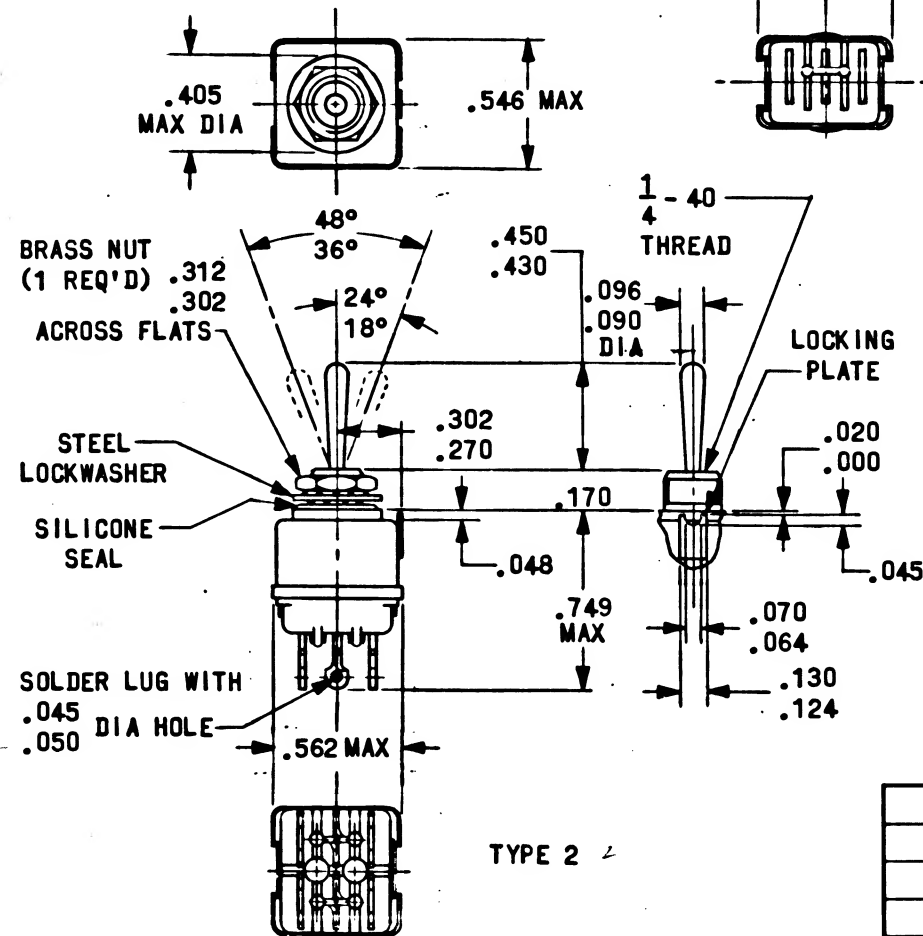
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>J. Sullivan</i> DATE <i>29 Nov 63</i> CHECKED <i>E. Foster</i> DATE <i>2 DEC 63</i> APPROVAL <i>S. V. Wynn</i> DATE <i>2 DEC 63</i> APPROVAL <i>L. J. Giddens</i> DATE <i>12/9/63</i>		FILTER, MICRON, FLUID	
SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		NASA DRAWING NO. 1016264	
FINAL FINISH NONE		CODE IDENT NO. 99974 SIZE C	
MIT APPROVAL <i>W. K. Hoff</i> DATE <i>10 Dec 63</i>		SCALE NONE WT SHEET 1 OF 1	
NEXT ASSY	USED ON	APPLICATION	

INCHES
0 1 2
PHOTOGRAPHIC SCALE ONLY

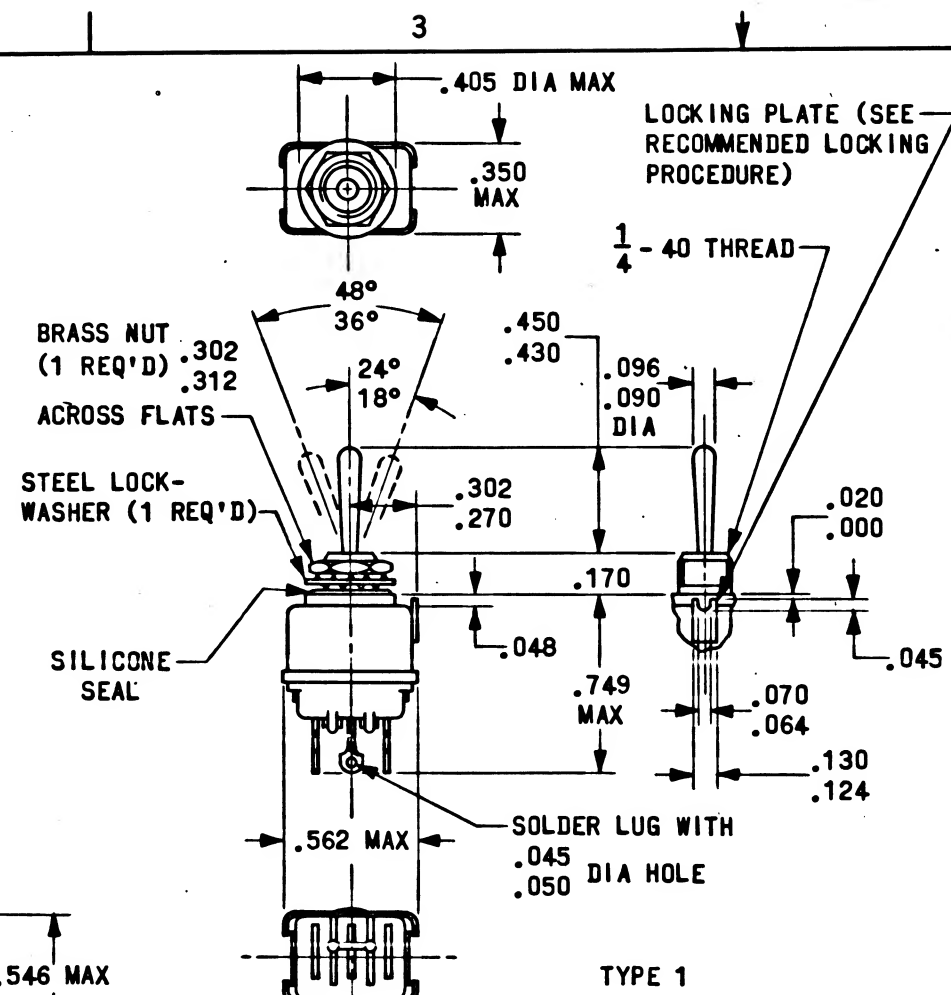
A



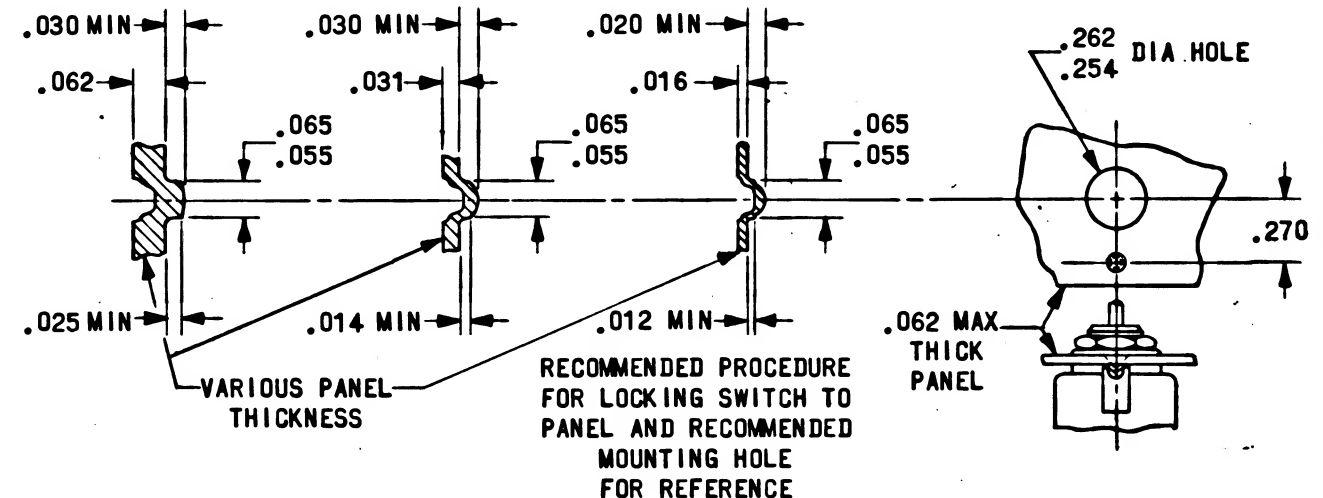
TERMINAL IDENTIFICATION
(FOR REF ONLY) (REAR VIEW
WITH LOCKING PLATE DOWN)



PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING.



TYPE 1



A	A	A
SHEET 1	SHEET 2	SHEET 3
REVISION STATUS OF SHEETS		

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± _____ ± .005 ± _____ ± .02
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
NEXT ASSY	USED ON	FINAL FINISH
APPLICATION		SEE REQUIREMENTS

A		REVISIONS			
5929101		SYM	DESCRIPTION	DATE	APPROVAL
		A	CHANGE IN ACCORDANCE WITH CM 194803 PER TDRR 7758	FEB 3 64	RWT. mem

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05212 DATE

12/12/63

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION		FIND NO.
LIST OF MATERIALS				
MIT INSTRUMENTAL LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER • HOUSTON, TEXAS		
DWS NO. <u>9-DEC-63</u> DATE <u>9-DEC-63</u> CHECKED <u>Ed Foster 4 Dec 63</u> APPROVAL <u>4 Dec 63</u> APPROVAL <u>L. Goodman 12/4/63</u>		SWITCH, TOGGLE, MINIATURE		
NASA APPROVAL <u>[Signature]</u> MIT APPROVAL <u>[Signature]</u>		SPECIFICATION CONTROL DRAWING CODE IDENT NO. <u>C</u> SIZE <u>1016265</u> NASA DRAWING NO. <u>1016265</u> SCALE <u>NONE</u> WT <u>1</u> OF <u>3</u>		

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

1016265

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	CHANGE IN ACCORDANCE WITH CH194808 PER TORR 7758	FEB 64	RWT mem

REQUIREMENTS:

1. GENERAL:

- A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, REV C, CLASS 3 EXCEPT PARAGRAPH 3.2.5.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIALS AND FINISHES:

- a. HOUSING: STAINLESS STEEL
- b. MOULDED PARTS: NYLON FILLED PLASTIC.
- c. TOGGLE, BUSHING AND HARDWARE: SHALL BE NICKEL PLATED OR STAINLESS STEEL.
- d. TERMINALS: GOLD PLATED

(2) DIMENSIONS: SHALL BE AS SHOWN

(3) HARDWARE: MOUNTING HARDWARE AS SHOWN SHALL BE FURNISHED ASSEMBLED TO THE PART.

(4) MARKING:

- a. PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER. CIRCUIT DESIGNATIONS SHALL BE PERMANENTLY AND LEGIBLY MARKED ON THE SIDE OF THE SWITCH.
- b. PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
MANUFACTURER'S NAME OR SYMBOL
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER
- c. MANUFACTURER'S PART NUMBER, LOT OR SERIAL NUMBER AND DATE CODE OR DATE OF MANUFACTURE MAY APPEAR ON THE PART OR PACKAGE.

B. ELECTRICAL REQUIREMENTS:

- (1) DIELECTRIC STRENGTH: PARTS SHALL WITHSTAND FOR A MINIMUM OF 5 SECONDS, WITHOUT DAMAGE, ARCING OR BREAKDOWN, AND WITH A MAXIMUM LEAKAGE CURRENT OF 10 MICROAMPS, A TEST VOLTAGE OF 1000 VOLTS DC APPLIED BETWEEN MUTUALLY INSULATED PARTS AND BETWEEN CURRENT CARRYING PARTS AND ALL NON-COMMON EXPOSED OR GROUNDED METAL PARTS. PARTS SHALL BE CAPABLE OF MEETING THIS REQUIREMENT IN EACH OF THE TOGGLE LEVER POSITIONS.
- (2) CONTACT VOLTAGE DROP: SHALL NOT EXCEED 1 MILLIVOLT WHEN TESTED WITH 100 MILLIAMP FROM A VOLTAGE SOURCE OF 2 TO 4 VOLTS DC. THREE SEPARATE READINGS SHALL BE TAKEN (ONE READING AFTER EACH ACTUATION OF THE SWITCH WITHOUT LOAD, FOR THREE SUCCESSIVE ACTUATIONS).
- (3) CIRCUIT ARRANGEMENT: SHALL BE AS SHOWN IN TABLE I.

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05212 DATE 12/17/63

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Bender</i> DATE <i>8 DEC 63</i> CHECKED <i>Ed Foster</i> DATE <i>4 DEC 63</i> APPROVAL <i>L. Gelman</i> DATE <i>12/17/63</i>		SWITCH, TOGGLE, MINIATURE	
SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		CODE IDENT NO.	NASA DRAWING NO.
FINAL FINISH SEE REQUIREMENTS		C	1016265
NEXT ASSY	USED ON	SCALE NONE	WT
APPLICATION		SHEET 2 OF 3	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFIRMING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS (CONTINUED):

3. DESIGN REQUIREMENTS:

A. PARTS SHALL BE CAPABLE OF MEETING THE FOLLOWING ENVIRONMENTAL REQUIREMENTS UNDER THE CONDITIONS SPECIFIED IN MIL-S-8834B:

- (1) OVERLOAD: AC AND DC.
- (2) LIFE:
 - a. ELECTRICAL: 20,000 CYCLES.
 - b. MECHANICAL: 40,000 CYCLES.
- (3) VIBRATION: 10 TO 500 CPS AT 10G.
- (4) SHOCK: 50G, 6 MILLISECOND PULSE DURATION.
- (5) ACCELERATION: 20G
- (6) SALT SPRAY: 100 HOURS.
- (7) HUMIDITY.
- (8) SAND AND DUST.
- (9) SEALING, PER PARAGRAPH 4.7.18
- (10) TEMPERATURE: MINUS 55°C TO PLUS 85°C.
- (11) TERMINAL STRENGTH: 5 POUNDS NORMAL TO MOUNTING PLANE
- (12) WITHSTANDING VOLTAGE.
- (13) MINIMUM CONTACT RATING: 30 MICROAMP AT 50 MILLIVOLTS.

B. CONTACT RATINGS:

- (1) MAXIMUM CONTACT RATINGS: SHALL BE AS SHOWN IN TABLE II.
- (2) MINIMUM CONTACT RATINGS: SHALL BE 25 MICROAMPS AT 5 MILLIVOLTS AC OR DC (CONTACT RESISTANCE SHALL BE 50 OHMS MAXIMUM AT THIS CONDITION).

TABLE I

NASA DASH NUMBER	TYPE	NO. POLES	CIRCUIT WITH TOGGLE LEVER IN			MANUFACTURER'S PART NUMBER (FOR REFERENCE)
			ONE EXTREME POSITION	CENTER POSITION	OTHER EXTREME POSITION LOCKING TAB SIDE	
-001	1	1	ON	OFF	ON	8866 K1
-002	1	1	MOM-ON	OFF	MOM-ON	K2
-003	1	1	ON	OFF	MOM-ON	K3
-004	1	1	ON	NONE	ON	K4
-005	1	1	ON	OFF	NONE	K5
-006	1	1	NONE	OFF	MOM-ON	K6
-007	1	1	ON	NONE	OFF	K7
-008	1	1	NONE	ON	MOM-ON	K8
-101	2	2	ON	OFF	ON	8867 K1
-102	2	2	MOM-ON	OFF	MOM-ON	K2
-103	2	2	ON	OFF	MOM-ON	K3
-104	2	2	ON	NONE	ON	K4
-105	2	2	ON	OFF	NONE	K5
-106	2	2	NONE	OFF	MOM-ON	K6
-107	2	2	ON	NONE	OFF	K7
-108	2	2	NONE	ON	MOM-ON	K8

TABLE II

CONTACT RATINGS, MAXIMUM		
TYPE LOAD	VOLTAGE	AMPERAGE
RESISTIVE	28 V. DC	4
	50 V. DC	1
	115 V. AC	3
INDUCTIVE	28 V. DC	1
	50 V. DC	-
	115 V. AC	1

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± .005 ± .02
DO NOT SCALE THIS DRAWING
MATERIAL
SEE REQUIREMENTS
HEAT TREATMENT
NONE
FINAL FINISH
SEE REQUIREMENTS

NEXT ASSY USED ON APPLICATION

NOTES:

1. ALL SWITCHES ON THIS DRAWING ARE DESIGNED SO THAT DIRECTION OF MOVEMENT OF THE SWITCH MECHANISM IS OPPOSITE TO THAT OF THE TOGGLE LEVER.
2. THESE SWITCHES ARE FOR USE WITH .062 MAX. PANEL THICKNESS.

THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER

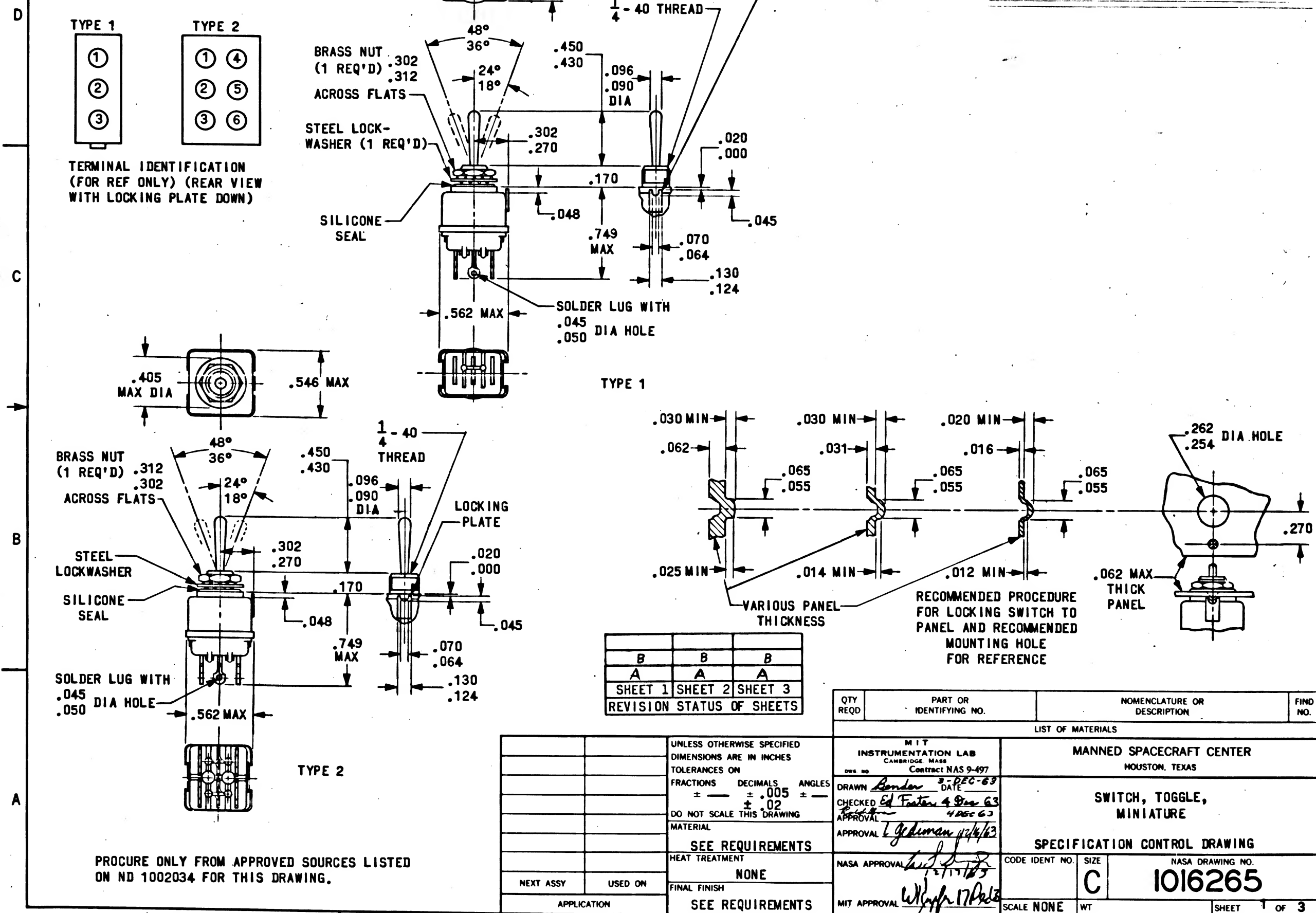
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS CONTRACT NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Bender</i> DATE 3-DEC-63 CHECKED <i>Ed Foster</i> 4 DEC 63 APPROVAL <i>L. G. Gorman</i> 12/16/63		SWITCH, TOGGLE, MINIATURE SPECIFICATION CONTROL DRAWING	
NASA APPROVAL <i>L. J. [Signature]</i> 12/17/63		CODE IDENT NO. SIZE C	NASA DRAWING NO. 1016265
MIT APPROVAL <i>W. K. [Signature]</i> 12/17/63		SCALE NONE WT	SHEET 3 OF 3

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05212 DATE 12/17/63

1016265

NOTICE — WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR USED SUCH DATA DOES NOT CONSTITUTE AN ENDORSEMENT OR RECOMMENDATION THEREOF. IT IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSES THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYS ANY RIGHT OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED OR UNPATENTED INVENTION OR TO REPRODUCE OR TRANSMIT IN ANY MANNER ANY DATA HEREIN CONTAINED.



REVISIONS				
SYM	DESCRIPTION	DATE	APPROVAL	
A	CHANGE IN ACCORDANCE WITH CM 194803 PER TDRR 7758	5 FEB 64	RWT MCM	
B	REVISED & UPGRADED TO CLASS A PER TDRR - 15775	1-FEB -65	B P2	

B	B	B
A	A	A
SHEET 1	SHEET 2	SHEET 3
REVISION STATUS OF SHEETS		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION		FIND NO.
LIST OF MATERIALS				
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Dwg. NO. Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS		
DRAWN <i>Borden</i> DATE <i>3-DEC-63</i> CHECKED <i>Ed Foster</i> 4 Dec 63 APPROVAL <i>[Signature]</i> 4 DEC 63 APPROVAL <i>[Signature]</i> 12/4/63		SWITCH, TOGGLE, MINIATURE		
NASA APPROVAL <i>[Signature]</i> 12/11/63 MIT APPROVAL <i>[Signature]</i> 12/11/63		CODE IDENT NO.	SIZE C	NASA DRAWING NO. 1016265
		SCALE NONE	WT	SHEET 1 OF 3

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, REV F, CLASS 3 EXCEPT PARA. 3.2.5.
- PRESERVATION, PACKAGING, PACKING, AND CONTAINER MARKING SHALL BE PER ND 1002215 CLASS 1, CODE 1.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIALS AND FINISHES:

- HOUSING: STAINLESS STEEL
 - MOULDED PARTS: NYLON FILLED PLASTIC.
 - TOGGLE, BUSHING AND HARDWARE: SHALL BE NICKEL PLATED OR STAINLESS STEEL.
 - TERMINALS: GOLD PLATED
- DIMENSIONS: SHALL BE AS SHOWN
 - HARDWARE: MOUNTING HARDWARE AS SHOWN SHALL BE FURNISHED ASSEMBLED TO THE PART.
 - MARKING:

- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER ND 1002019, EXCEPT STYLE OF CHARACTER SHALL BE BERNARD, WITH THE LAST FOUR DIGITS OF THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER. CIRCUIT DESIGNATIONS SHALL BE PERMANENTLY AND LEGIBLY MARKED ON THE SIDE OF THE SWITCH.
- MANUFACTURER'S PART NUMBER, LOT OR SERIAL NUMBER AND DATE CODE OR DATE OF MANUFACTURE MAY APPEAR ON THE PART OR PACKAGE.

B. ELECTRICAL REQUIREMENTS:

- DIELECTRIC STRENGTH: PARTS SHALL WITHSTAND FOR A MINIMUM OF ONE MINUTE, WITHOUT DAMAGE, ARCING OR BREAKDOWN, AND WITH A MAXIMUM LEAKAGE CURRENT OF 10 MICROAMPS, A TEST VOLTAGE OF 1500 VOLTS AC (RMS) APPLIED BETWEEN MUTUALLY INSULATED PARTS AND BETWEEN CURRENT CARRYING PARTS AND ALL NON-COMMON EXPOSED OR GROUNDED METAL PARTS. PARTS SHALL BE CAPABLE OF MEETING THIS REQUIREMENT IN EACH OF THE TOGGLE LEVER POSITIONS.
- CONTACT VOLTAGE DROP: SHALL NOT EXCEED 1 MILLIVOLT WHEN TESTED WITH 100 MILLIAMPER FROM A VOLTAGE SOURCE OF 2 TO 4 VOLTS DC. THREE SEPARATE READINGS SHALL BE TAKEN (ONE READING AFTER EACH ACTUATION OF THE SWITCH WITHOUT LOAD, FOR THREE SUCCESSIVE ACTUATIONS).
- CIRCUIT ARRANGEMENT: SHALL BE AS SHOWN IN TABLE I.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
TOLERANCES ON	
FRACTIONS	DECIMALS ANGLES
± .005	± .02
DO NOT SCALE THIS DRAWING	
MATERIAL	
SEE REQUIREMENTS	
HEAT TREATMENT	
NONE	
FINAL FINISH	
SEE REQUIREMENTS	
NEXT ASSY	USED ON
APPLICATION	

1016265

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	CHANGE IN ACCORDANCE WITH CM194802 PER TDRR 7756	FEB 64	BWT
B	REVISED & UPGRADED TO CLASS A PER TDRR 15775	1-FEB-65	B

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Bender</i> DATE 8-DEC-63 CHECKED <i>Ed Foster</i> 4 DEC 63 APPROVAL <i>L. Goldman</i> 12/16/63		SWITCH, TOGGLE, MINIATURE	
NASA APPROVAL <i>L. Goldman</i> 12/17/63 MIT APPROVAL <i>W. J. P. P.</i>		SPECIFICATION CONTROL DRAWING	
CODE IDENT NO.		SIZE	NASA DRAWING NO.
C		C	1016265
SCALE NONE		WT	SHEET 2 OF 3

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERE TO.

REQUIREMENTS (CONTINUED):

3. DESIGN REQUIREMENTS:

A. PARTS SHALL BE CAPABLE OF MEETING THE FOLLOWING ENVIRONMENTAL REQUIREMENTS UNDER THE CONDITIONS SPECIFIED IN MIL-S-8834B:

- (1) OVERLOAD: AC AND DC.
- (2) LIFE:
 - a. ELECTRICAL: 20,000 CYCLES.
 - b. MECHANICAL: 40,000 CYCLES.
- (3) VIBRATION: 10 TO 500 CPS AT 10G.
- (4) SHOCK: 50G, 6 MILLISECOND PULSE DURATION.
- (5) ACCELERATION: 20G
- (6) SALT SPRAY: 100 HOURS.
- (7) HUMIDITY.
- (8) SAND AND DUST.

- (10) TEMPERATURE: MINUS 55°C TO PLUS 85°C.
- (11) TERMINAL STRENGTH: 5 POUNDS NORMAL TO MOUNTING PLANE
- (12) WITHSTANDING VOLTAGE.
- (13) MINIMUM CONTACT RATING: 30 MICROAMP AT 50 MILLIVOLTS.

B. CONTACT RATINGS:

- (1) MAXIMUM CONTACT RATINGS: SHALL BE AS SHOWN IN TABLE II.
- (2) MINIMUM CONTACT RATINGS: SHALL BE 25 MICROAMPS AT 5 MILLIVOLTS AC OR DC (CONTACT RESISTANCE SHALL BE 50 OHMS MAXIMUM AT THIS CONDITION).

TABLE I

NASA DASH NUMBER	TYPE	NO. POLES	CIRCUIT WITH TOGGLE LEVER IN			MANUFACTURER'S PART NUMBER (FOR REFERENCE)
			ONE EXTREME POSITION	CENTER POSITION	OTHER EXTREME POSITION LOCKING TAB SIDE	
-001	1	1	ON	OFF	ON	8866 K1
-002	1	1	MOM-ON	OFF	MOM-ON	K2
-003	1	1	ON	OFF	MOM-ON	K3
-004	1	1	ON	NONE	ON	K4
-005	1	1	ON	OFF	NONE	K5
-006	1	1	NONE	OFF	MOM-ON	K6
-007	1	1	ON	NONE	OFF	K7
-008	1	1	NONE	ON	MOM-ON	K8
-101	2	2	ON	OFF	ON	8867 K1
-102	2	2	MOM-ON	OFF	MOM-ON	K2
-103	2	2	ON	OFF	MOM-ON	K3
-104	2	2	ON	NONE	ON	K4
-105	2	2	ON	OFF	NONE	K5
-106	2	2	NONE	OFF	MOM-ON	K6
-107	2	2	ON	NONE	OFF	K7
-108	2	2	NONE	ON	MOM-ON	K8

TABLE II

CONTACT RATINGS, MAXIMUM		
TYPE LOAD	VOLTAGE	AMPERAGE
RESISTIVE	28 V. DC	4
	50 V. DC	1
	115 V. AC	3
INDUCTIVE	28 V. DC	1
	50 V. DC	-
	115 V. AC	1

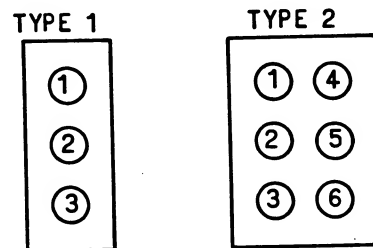
NOTES:

1. ALL SWITCHES ON THIS DRAWING ARE DESIGNED SO THAT DIRECTION OF MOVEMENT OF THE SWITCH MECHANISM IS OPPOSITE TO THAT OF THE TOGGLE LEVER.
2. THESE SWITCHES ARE FOR USE WITH .062 MAX. PANEL THICKNESS.

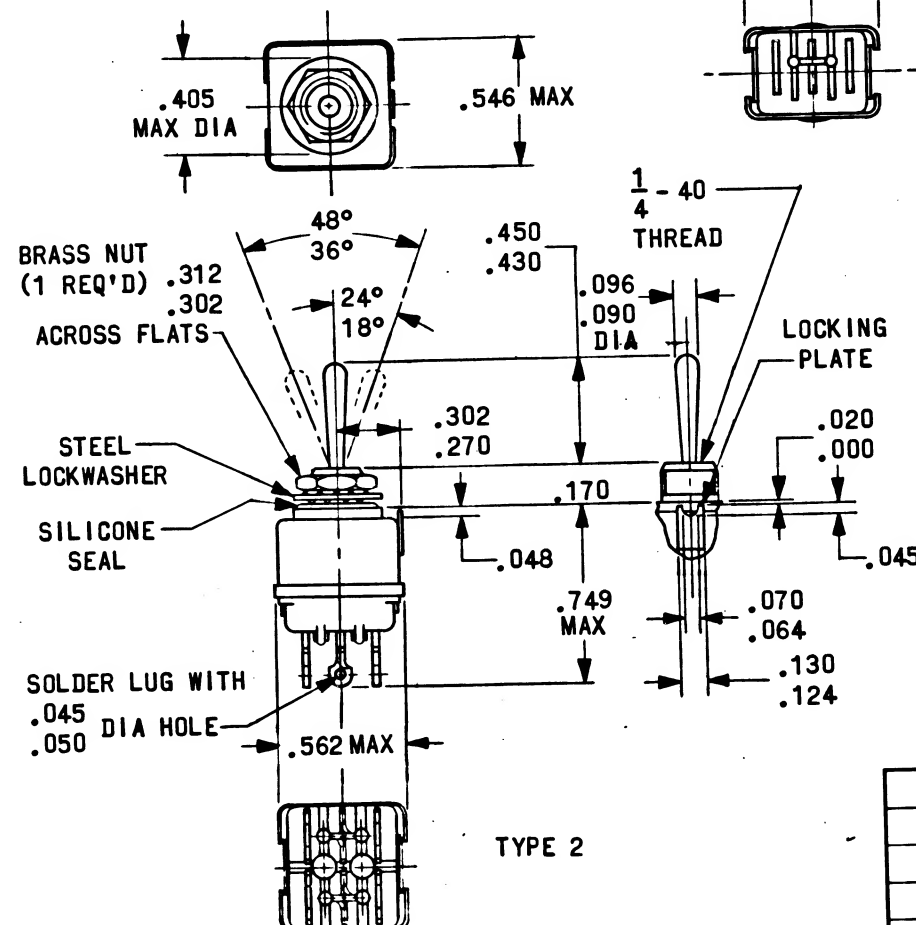
THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Bender</i> DATE <i>8 DEC-63</i> CHECKED <i>Ed Foster</i> 4 Dec 63 APPROVAL <i>L. J. Gidman</i> 11/16/63		SWITCH, TOGGLE, MINIATURE	
NASA APPROVAL <i>W. J. Gidman</i> 12/17/63		CODE IDENT NO.	NASA DRAWING NO.
MIT APPROVAL <i>W. J. Gidman</i> 12/17/63		C	1016265
SCALE NONE		WT	SHEET 3 OF 3

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.



TERMINAL IDENTIFICATION
(FOR REF ONLY) (REAR VIEW
WITH LOCKING PLATE DOWN)



PROCURE ONLY FROM APPROVED SOURCES LISTED
ON CONTRACTORS ACCEPTABLE SUPPLIERS
LIST.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON	
FRACTIONS	DECIMALS ANGLES
±	± .005 ±
DO NOT SCALE THIS DRAWING	± .02
MATERIAL	SEE REQUIREMENTS
HEAT TREATMENT	NONE
FINAL FINISH	SEE REQUIREMENTS
NEXT ASSY	USED ON
APPLICATION	

LOCKING PLATE (SEE
RECOMMENDED LOCKING
PROCEDURE)

TYPE 1

TYPE 2

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	CHANGE IN ACCORDANCE WITH CM 194803 PER TDRR 7758	3 FEB 64	RWT mem
B	REVISED & UPGRADED TO CLASS A PER TDRR - 15775	1-FEB-65	B. P7
C	REVISED PER TDRR 21945	1 SEP 65	OPK AU

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Bender</i> 3-DEC-63 CHECKED <i>Ed Foster</i> 4 DEC 63 APPROVAL <i>L. Goldman</i> 12/16/63		SWITCH, TOGGLE, MINIATURE	
NASA APPROVAL <i>W. J. Peto</i> 12/17/63 MIT APPROVAL <i>W. J. Peto</i> 12/17/63		SPECIFICATION CONTROL DRAWING	
CODE IDENT NO. C		NASA DRAWING NO. 1016265	
SCALE NONE		SHEET 1 OF 3	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN MIL-Q-9858.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIALS AND FINISHES:

- HOUSING: STAINLESS STEEL
- MOULDED PARTS: NYLON FILLED PLASTIC.
- TOGGLE, BUSHING AND HARDWARE: SHALL BE NICKEL PLATED OR STAINLESS STEEL.

(d) TERMINALS: GOLD PLATED

(2) DIMENSIONS: SHALL BE AS SHOWN

(3) HARDWARE: MOUNTING HARDWARE AS SHOWN SHALL BE FURNISHED ASSEMBLED TO THE PART.

(4) MARKING:

- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER ND 1002019, EXCEPT STYLE OF CHARACTER SHALL BE BERNARD, WITH THE LAST FOUR DIGITS OF THE NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER. CIRCUIT DESIGNATIONS SHALL BE PERMANENTLY AND LEGIBLY MARKED ON THE SIDE OF THE SWITCH.

- ~~MANUFACTURER'S PART NUMBER, LOT OR SERIAL NUMBER AND DATE CODE OR DATE OF MANUFACTURE MAY APPEAR ON THE PART OR PACKAGE.~~

B. ELECTRICAL REQUIREMENTS:

- DIELECTRIC STRENGTH: PARTS SHALL WITHSTAND FOR A MINIMUM OF ONE MINUTE, WITHOUT DAMAGE, ARCING OR BREAK-DOWN, AND WITH A MAXIMUM LEAKAGE CURRENT OF 10 MICRO-AMPS, A TEST VOLTAGE OF 1500 VOLTS AC (RMS) APPLIED BETWEEN MUTUALLY INSULATED PARTS AND BETWEEN CURRENT CARRYING PARTS AND ALL NON-COMMON EXPOSED OR GROUNDED METAL PARTS. PARTS SHALL BE CAPABLE OF MEETING THIS REQUIREMENT IN EACH OF THE TOGGLE LEVER POSITIONS.

- CONTACT VOLTAGE DROP: SHALL NOT EXCEED 1 MILLIVOLT WHEN TESTED WITH 100 MILLIAMPS FROM A VOLTAGE SOURCE OF 2 TO 4 VOLTS DC. THREE SEPARATE READINGS SHALL BE TAKEN (ONE READING AFTER EACH ACTUATION OF THE SWITCH WITHOUT LOAD, FOR THREE SUCCESSIVE ACTUATIONS).

- CIRCUIT ARRANGEMENT: SHALL BE AS SHOWN IN TABLE I.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		\pm $\pm .005$ \pm
		$\pm .02$
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		SEE REQUIREMENTS
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Bender</i> DATE <i>3-DEC-63</i>		SWITCH, TOGGLE, MINIATURE	
CHECKED <i>Ed Foster</i> DATE <i>4 DEC 63</i>		SPECIFICATION CONTROL DRAWING	
APPROVAL <i>L. Goldman</i> DATE <i>12/17/63</i>		NASA DRAWING NO. 1016265	
NASA APPROVAL <i>W. J. ...</i> DATE <i>12/17/63</i>		CODE IDENT NO.	SIZE
MIT APPROVAL <i>W. J. ...</i> DATE <i>12/17/63</i>		C	C
		SCALE NONE	WT
		SHEET 2 OF 3	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERE TO.

REQUIREMENTS (CONTINUED):

3. DESIGN REQUIREMENTS:

A. PARTS SHALL BE CAPABLE OF MEETING THE FOLLOWING ENVIRONMENTAL REQUIREMENTS UNDER THE CONDITIONS SPECIFIED IN MIL-S-8834B:

- (1) OVERLOAD: AC AND DC.
- (2) LIFE:
 - a. ELECTRICAL: 20,000 CYCLES.
 - b. MECHANICAL: 40,000 CYCLES.
- (3) VIBRATION: 10 TO 500 CPS AT 10G.
- (4) SHOCK: 50G, 6 MILLISECOND PULSE DURATION.
- (5) ACCELERATION: 20G
- (6) SALT SPRAY: 100 HOURS.
- (7) HUMIDITY.
- (8) SAND AND DUST.

- (10) TEMPERATURE: MINUS 55°C TO PLUS 85°C.
 - (11) TERMINAL STRENGTH: 5 POUNDS NORMAL TO MOUNTING PLANE
 - (12) WITHSTANDING VOLTAGE.
 - (13) MINIMUM CONTACT RATING: 30 MICROAMP AT 50 MILLIVOLTS.
- ##### B. CONTACT RATINGS:
- (1) MAXIMUM CONTACT RATINGS: SHALL BE AS SHOWN IN TABLE II.
 - (2) MINIMUM CONTACT RATINGS: SHALL BE 25 MICROAMPS AT 5 MILLIVOLTS AC OR DC (CONTACT RESISTANCE SHALL BE 50 OHMS MAXIMUM AT THIS CONDITION).

TABLE I

NASA DASH NUMBER	TYPE	NO. POLES	CIRCUIT WITH TOGGLE LEVER IN		
			ONE EXTREME POSITION	CENTER POSITION	OTHER EXTREME POSITION LOCKING TAB SIDE
-001	1	1	ON	OFF	ON
-002	1	1	MOM-ON	OFF	MOM-ON
-003	1	1	ON	OFF	MOM-ON
-004	1	1	ON	NONE	ON
-005	1	1	ON	OFF	NONE
-006	1	1	NONE	OFF	MOM-ON
-007	1	1	ON	NONE	OFF
-008	1	1	NONE	ON	MOM-ON
-101	2	2	ON	OFF	ON
-102	2	2	MOM-ON	OFF	MOM-ON
-103	2	2	ON	OFF	MOM-ON
-104	2	2	ON	NONE	ON
-105	2	2	ON	OFF	NONE
-106	2	2	NONE	OFF	MOM-ON
-107	2	2	ON	NONE	OFF
-108	2	2	NONE	ON	MOM-ON

TABLE II

CONTACT RATINGS, MAXIMUM		
TYPE LOAD	VOLTAGE	AMPERAGE
RESISTIVE	28 V. DC	4
	50 V. DC	1
	115 V. AC	3
INDUCTIVE	28 V. DC	1
	50 V. DC	-
	115 V. AC	1

NOTES:

1. ALL SWITCHES ON THIS DRAWING ARE DESIGNED SO THAT DIRECTION OF MOVEMENT OF THE SWITCH MECHANISM IS OPPOSITE TO THAT OF THE TOGGLE LEVER.
2. THESE SWITCHES ARE FOR USE WITH .062 MAX. PANEL THICKNESS.

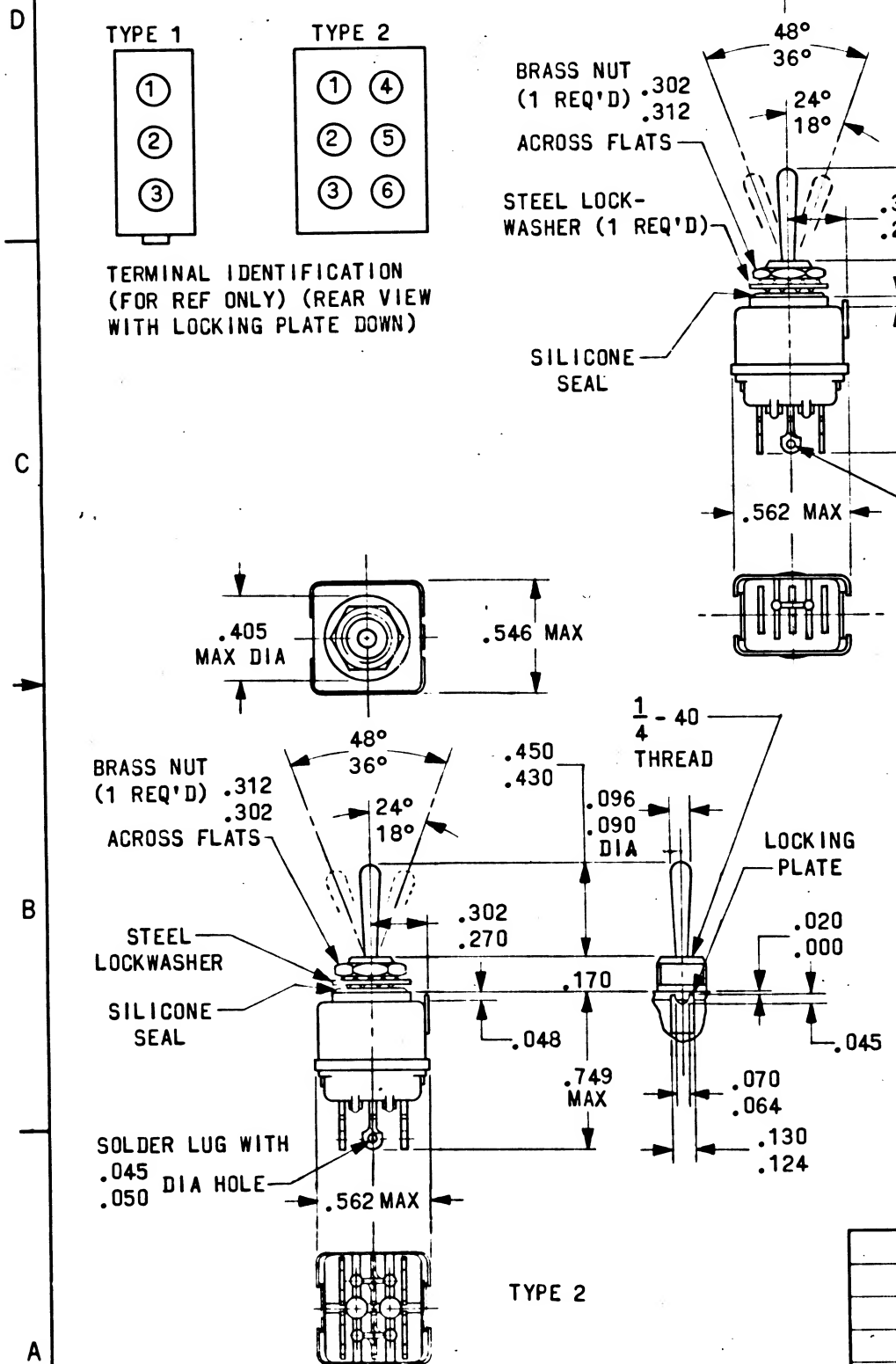
THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Bender</i> DATE <i>3-DEC-63</i> CHECKED <i>Ed Foster</i> DATE <i>4 Dec 63</i> APPROVAL <i>L. G. Edman</i> DATE <i>12/16/63</i>		SWITCH, TOGGLE, MINIATURE	
NASA APPROVAL <i>W. J. ...</i> DATE <i>12/17/63</i> MIT APPROVAL <i>W. J. ...</i> DATE <i>12/17/63</i>		CODE IDENT NO. C	NASA DRAWING NO. 1016265
SCALE NONE		WT	SHEET 3 OF 3

NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

1016265

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	CHANGE IN ACCORDANCE WITH CM194803 PER TDRR 7758	3 FEB 64	RWT mem
B	REVISED & UPGRADED TO CLASS A PER TDRR 15715	1-FEB-65	B
C	REVISED PER TDRR 21945	1-SEP-65	cmk nu
D	REVISION STATUS CHANGED	10-DEC-65	B



PROCURE ONLY FROM APPROVED SOURCES LISTED ON CONTRACTORS ACCEPTABLE SUPPLIERS LIST.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
TOLERANCES ON	
FRACTIONS	DECIMALS ANGLES
	$\pm .005$
DO NOT SCALE THIS DRAWING	
MATERIAL	
SEE REQUIREMENTS	
HEAT TREATMENT	
NONE	
FINAL FINISH	
SEE REQUIREMENTS	
NEXT ASSY	USED ON
APPLICATION	

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Bender</i> 3-DEC-63 CHECKED <i>Ed Foster</i> 4 Dec 63 APPROVAL <i>Ed Foster</i> 4 DEC 63		SWITCH, TOGGLE, MINIATURE	
APPROVAL <i>Ed Foster</i> 12/6/63		SPECIFICATION CONTROL DRAWING	
NASA APPROVAL <i>Ed Foster</i> 12/6/63		CODE IDENT NO. SIZE	NASA DRAWING NO.
MIT APPROVAL <i>Ed Foster</i> 12/6/63		C	1016265
		SCALE NONE WT	SHEET 1 OF 3

NOTICE: IN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY, NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN MIL-Q-9858.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIALS AND FINISHES:

- (a) HOUSING: STAINLESS STEEL
- (b) MOULDED PARTS: NYLON FILLED PLASTIC.
- (c) TOGGLE, BUSHING AND HARDWARE: SHALL BE NICKEL PLATED OR STAINLESS STEEL.
- (d) TERMINALS: GOLD PLATED

(2) DIMENSIONS: SHALL BE AS SHOWN

(3) HARDWARE: MOUNTING HARDWARE AS SHOWN SHALL BE FURNISHED ASSEMBLED TO THE PART.

(4) MARKING:

- (a) PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER ND 1002019, EXCEPT STYLE OF CHARACTER SHALL BE BERNARD, WITH THE LAST FOUR DIGITS OF THE NASA DRAWING NUMBER, DASH NUMBER, DESIGN LETTER. CIRCUIT DESIGNATIONS SHALL BE PERMANENTLY AND LEGIBLY MARKED ON THE SIDE OF THE SWITCH.

- (b) MANUFACTURER'S PART NUMBER, LOT OR SERIAL NUMBER AND DATE CODE OR DATE OF MANUFACTURE MAY APPEAR ON THE PART OR PACKAGE.

B. ELECTRICAL REQUIREMENTS:

- (1) DIELECTRIC STRENGTH: PARTS SHALL WITHSTAND FOR A MINIMUM OF ONE MINUTE, WITHOUT DAMAGE, ARCING OR BREAKDOWN, AND WITH A MAXIMUM LEAKAGE CURRENT OF 10 MICROAMPS, A TEST VOLTAGE OF 1500 VOLTS AC (RMS) APPLIED BETWEEN MUTUALLY INSULATED PARTS AND BETWEEN CURRENT CARRYING PARTS AND ALL NON-COMMON EXPOSED OR GROUNDED METAL PARTS. PARTS SHALL BE CAPABLE OF MEETING THIS REQUIREMENT IN EACH OF THE TOGGLE LEVER POSITIONS.

- (2) CONTACT VOLTAGE DROP: SHALL NOT EXCEED 1 MILLIVOLT WHEN TESTED WITH 100 MILLIAMPERE FROM A VOLTAGE SOURCE OF 2 TO 4 VOLTS DC. THREE SEPARATE READINGS SHALL BE TAKEN (ONE READING AFTER EACH ACTUATION OF THE SWITCH WITHOUT LOAD, FOR THREE SUCCESSIVE ACTUATIONS).

- (3) CIRCUIT ARRANGEMENT: SHALL BE AS SHOWN IN TABLE I.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		$\pm .005$
		$\pm .02$
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		SEE REQUIREMENTS
NEXT ASSY	USED ON	
		APPLICATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Bender</i> DATE <i>3 DEC 63</i>		SWITCH, TOGGLE, MINIATURE	
CHECKED <i>Ed Foster</i> DATE <i>4 DEC 63</i>		SPECIFICATION CONTROL DRAWING	
APPROVAL <i>[Signature]</i>		NASA DRAWING NO 1016265	
NASA APPROVAL <i>[Signature]</i> DATE <i>12/17/63</i>		CODE IDENT NO	SIZE
MIT APPROVAL <i>[Signature]</i>		C	C
		SCALE NONE	WT
		SHEET 2 OF 3	

REQUIREMENTS (CONTINUED):

3. DESIGN REQUIREMENTS:

A. PARTS SHALL BE CAPABLE OF MEETING THE FOLLOWING ENVIRONMENTAL REQUIREMENTS UNDER THE CONDITIONS SPECIFIED IN MIL-S-8834B:

(1) OVERLOAD: AC AND DC.

(2) LIFE:

- a. ELECTRICAL: 20,000 CYCLES.
b. MECHANICAL: 40,000 CYCLES.

(3) VIBRATION: 10 TO 500 CPS AT 10G.

(4) SHOCK: 50G, 6 MILLISECOND PULSE DURATION.

(5) ACCELERATION: 20G

(6) SALT SPRAY: 100 HOURS.

(7) HUMIDITY.

(8) SAND AND DUST.

(10) TEMPERATURE: MINUS 55°C TO PLUS 85°C.

(11) TERMINAL STRENGTH: 5 POUNDS NORMAL TO MOUNTING PLANE

(12) WITHSTANDING VOLTAGE.

(13) MINIMUM CONTACT RATING: 30 MICROAMP AT 50 MILLIVOLTS.

B. CONTACT RATINGS:

(1) MAXIMUM CONTACT RATINGS: SHALL BE AS SHOWN IN TABLE II.

- (2) MINIMUM CONTACT RATINGS: SHALL BE 25 MICROAMPS AT 5 MILLIVOLTS AC OR DC (CONTACT RESISTANCE SHALL BE 50 OHMS MAXIMUM AT THIS CONDITION).

TABLE I

NASA DASH NUMBER	TYPE	NO. POLES	CIRCUIT WITH TOGGLE LEVER IN			MANUFACTURERS PART NUMBER (FOR REFERENCE)
			ONE EXTREME POSITION	CENTER POSITION	OTHER EXTREME POSITION LOCKING TAB SIDE	
-001	1	1	ON	OFF	ON	8866K1
-002	1	1	MOM-ON	OFF	MOM-ON	8866K2
-003	1	1	ON	OFF	MOM-ON	8866K3
-004	1	1	ON	NONE	ON	8866K4
-005	1	1	ON	OFF	NONE	8866K5
-006	1	1	NONE	OFF	MOM-ON	8866K6
-007	1	1	ON	NONE	OFF	8866K7
-008	1	1	NONE	ON	MOM-ON	8866K8
-101	2	2	ON	OFF	ON	8867K1
-102	2	2	MOM-ON	OFF	MOM-ON	8867K2
-103	2	2	ON	OFF	MOM-ON	8867K3
-104	2	2	ON	NONE	ON	8867K4
-105	2	2	ON	OFF	NONE	8867K5
-106	2	2	NONE	OFF	MOM-ON	8867K6
-107	2	2	ON	NONE	OFF	8867K7
-108	2	2	NONE	ON	MOM-ON	8867K8

TABLE II

CONTACT RATINGS, MAXIMUM		
TYPE LOAD	VOLTAGE	AMPERAGE
RESISTIVE	28 V., DC	4
	50 V., DC	1
	115 V., AC	3
INDUCTIVE	28 V., DC	1
	50 V., DC	-
	115 V., AC	1

NOTES:

1. ALL SWITCHES ON THIS DRAWING ARE DESIGNED SO THAT DIRECTION OF MOVEMENT OF THE SWITCH MECHANISM IS OPPOSITE TO THAT OF THE TOGGLE LEVER.
2. THESE SWITCHES ARE FOR USE WITH .062 MAX. PANEL THICKNESS.

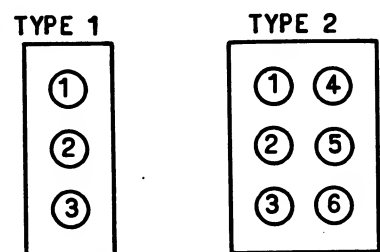
THE PART NUMBER IS THE DRAWING NUMBER
PLUS THE APPLICABLE DASH NUMBER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION		FIND NO.
LIST OF MATERIALS				
MIT INSTRUMENTATION LAB CAMBRIDGE MASS DWG NO Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS		
ES	DRAWN <i>Bender</i> DATE <i>9-DEC-63</i> CHECKED <i>Ed Foster 4 Dec 63</i> APPROVAL <i>L. Williams</i>	SWITCH, TOGGLE, MINIATURE		
MIT APPROVAL <i>W. K. Miller 12 Dec 63</i>		SPECIFICATION CONTROL DRAWING		
NASA APPROVAL <i>1.1.12.63</i>		CODE IDENT NO.	SIZE C	NASA DRAWING NO 1016265
MIT APPROVAL <i>W. K. Miller 12 Dec 63</i>		SCALE NONE	WT	SHEET 3 OF 3

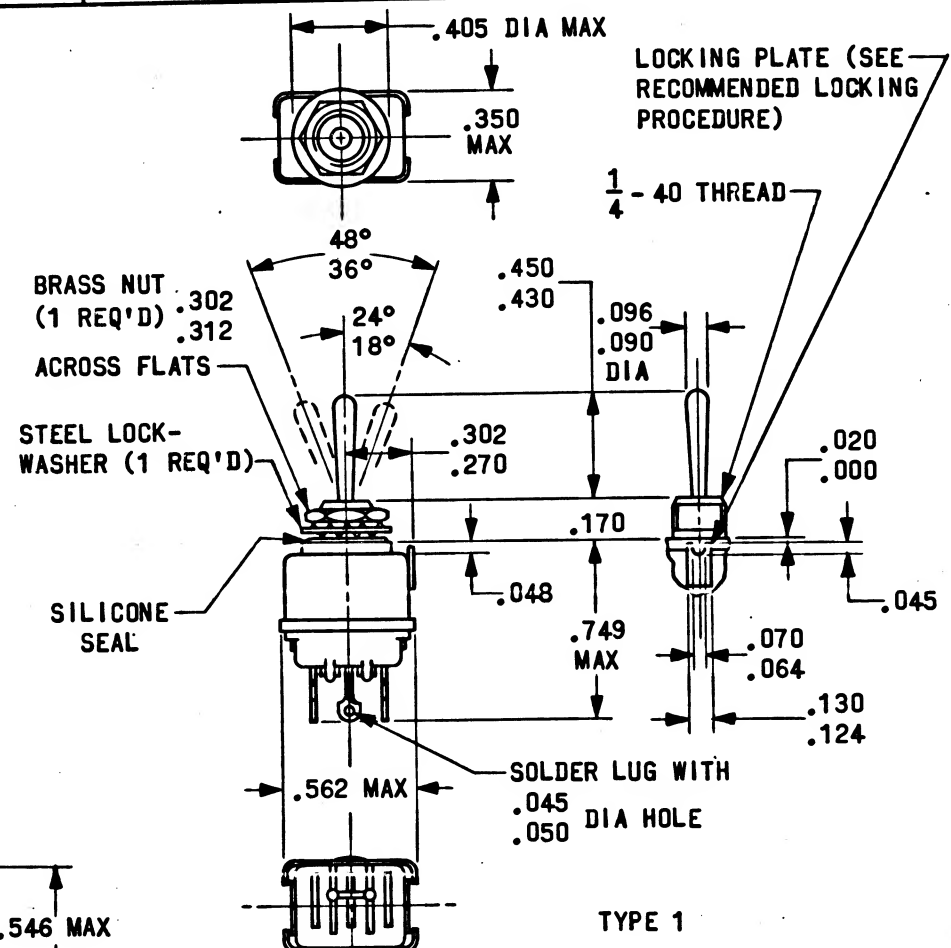
NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

1016265

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL

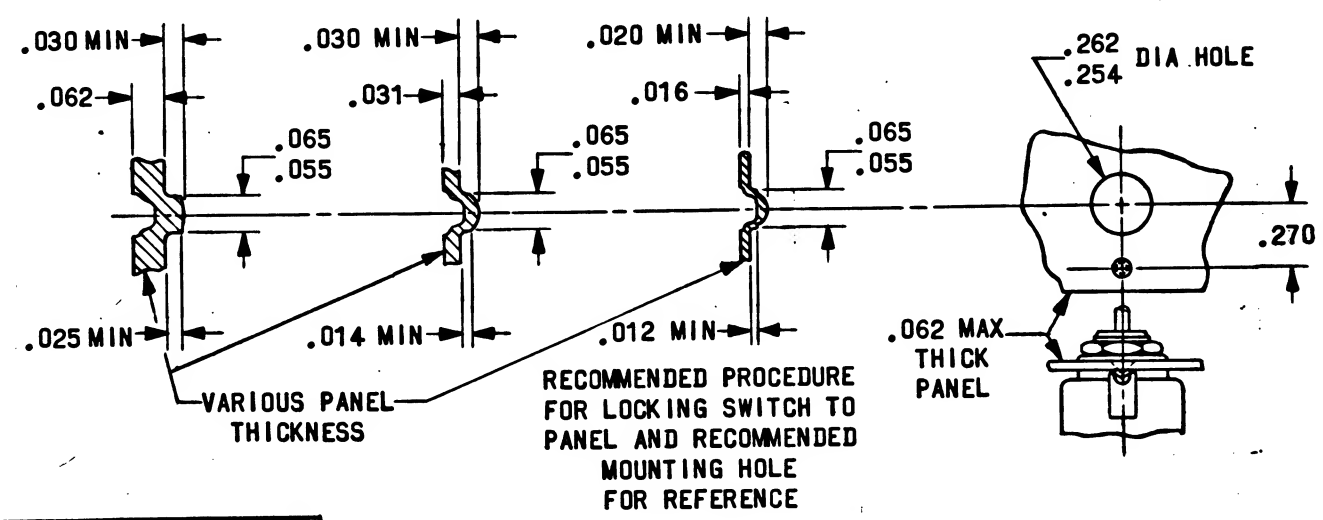
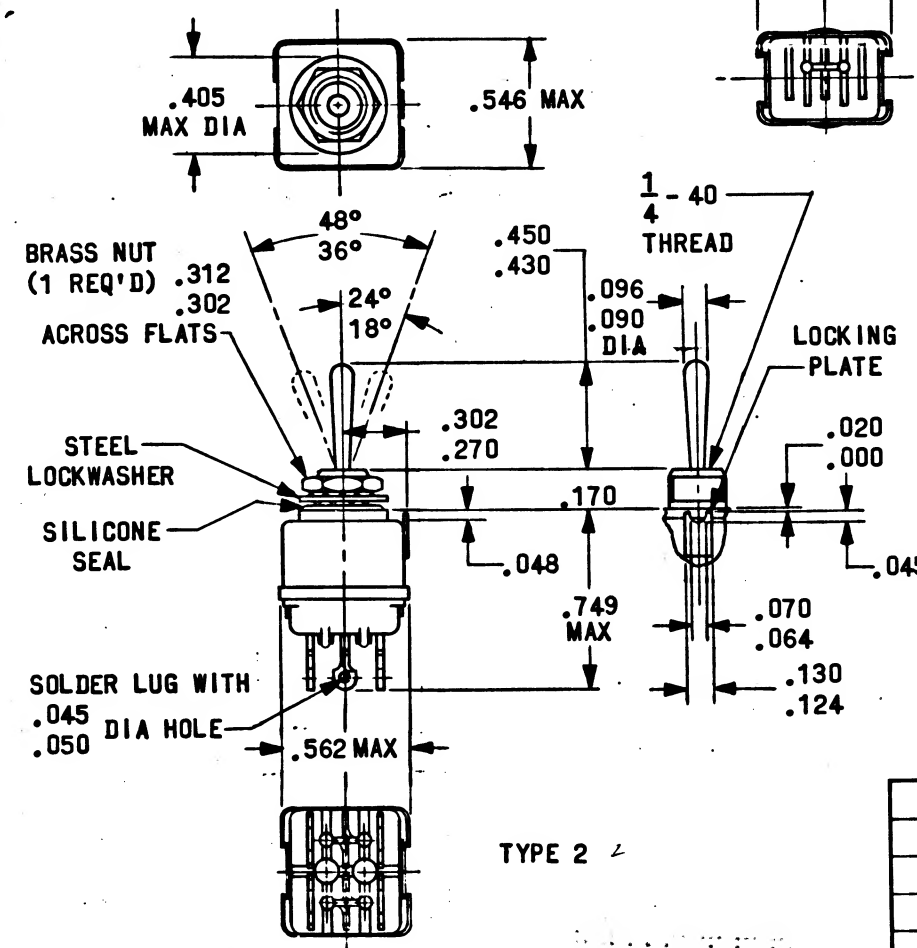


TERMINAL IDENTIFICATION
(FOR REF ONLY) (REAR VIEW
WITH LOCKING PLATE DOWN)



FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05212 DATE 12/12/63



SHEET 1	SHEET 2	SHEET 3
REVISION STATUS OF SHEETS		

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± .005 ± .02 ± .02 DO NOT SCALE THIS DRAWING	
MATERIAL SEE REQUIREMENTS	
HEAT TREATMENT NONE	
FINAL FINISH SEE REQUIREMENTS	
NEXT ASSY	USED ON
APPLICATION	

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Borden</i> 3 DEC 63 CHECKED <i>Ed Foster</i> 4 Dec 63 APPROVAL <i>L. G. Gorman</i> 12/16/63		SWITCH, TOGGLE, MINIATURE	
NASA APPROVAL <i>W. J. ...</i> 12/17/63 MIT APPROVAL <i>W. J. ...</i> 12/17/63		SPECIFICATION CONTROL DRAWING	
CODE IDENT NO. C		NASA DRAWING NO. 1016265	
SCALE NONE		SHEET 1 OF 3	

PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING.



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REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIALS AND FINISHES:

- HOUSING: STAINLESS STEEL
- MOULDED PARTS: NYLON FILLED PLASTIC.
- TOGGLE, BUSHING AND HARDWARE: SHALL BE NICKEL PLATED OR STAINLESS STEEL.
- TERMINALS: GOLD PLATED

(2) DIMENSIONS: SHALL BE AS SHOWN

(3) HARDWARE: MOUNTING HARDWARE AS SHOWN SHALL BE FURNISHED ASSEMBLED TO THE PART.

(4) MARKING:

- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER. CIRCUIT DESIGNATIONS SHALL BE PERMANENTLY AND LEGIBLY MARKED ON THE SIDE OF THE SWITCH.

- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:

MANUFACTURER'S NAME OR SYMBOL

NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER

- MANUFACTURER'S PART NUMBER, LOT OR SERIAL NUMBER AND DATE CODE OR DATE OF MANUFACTURE MAY APPEAR ON THE PART OR PACKAGE.

B. ELECTRICAL REQUIREMENTS:

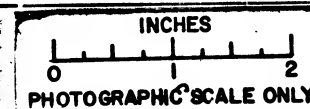
- DIELECTRIC STRENGTH: PARTS SHALL WITHSTAND FOR A MINIMUM OF 5 SECONDS, WITHOUT DAMAGE, ARCING OR BREAKDOWN, AND WITH A MAXIMUM LEAKAGE CURRENT OF 10 MICROAMPS, A TEST VOLTAGE OF 1000 VOLTS DC APPLIED BETWEEN MUTUALLY INSULATED PARTS AND BETWEEN CURRENT CARRYING PARTS AND ALL NON-COMMON EXPOSED OR GROUNDED METAL PARTS. PARTS SHALL BE CAPABLE OF MEETING THIS REQUIREMENT IN EACH OF THE TOGGLE LEVER POSITIONS.

- CONTACT VOLTAGE DROP: SHALL NOT EXCEED 1 MILLIVOLT WHEN TESTED WITH 100 MILLIAMPS FROM A VOLTAGE SOURCE OF 2 TO 4 VOLTS DC. THREE SEPARATE READINGS SHALL BE TAKEN (ONE READING AFTER EACH ACTUATION OF THE SWITCH WITHOUT LOAD, FOR THREE SUCCESSIVE ACTUATIONS).

- CIRCUIT ARRANGEMENT: SHALL BE AS SHOWN IN TABLE 1.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± .005 ± .02
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
NEXT ASSY	USED ON	FINAL FINISH
		SEE REQUIREMENTS
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Bender</i> 3-DEC-63 CHECKED <i>Ed Foster</i> 4 DEC 63 APPROVAL <i>L. J. Gidman</i> 12/17/63		SWITCH, TOGGLE, MINIATURE	
NASA APPROVAL <i>[Signature]</i> 12/17/63		CODE IDENT NO.	NASA DRAWING NO.
MIT APPROVAL <i>[Signature]</i> 12/17/63		C	1016265
SCALE NONE		WT	SHEET 2 OF 3



1016265

REVISIONS

SYM DESCRIPTION DATE APPROVAL

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05212 DATE 12/17/63

1016265

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFERRING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS (CONTINUED):

3. DESIGN REQUIREMENTS:

A. PARTS SHALL BE CAPABLE OF MEETING THE FOLLOWING ENVIRONMENTAL REQUIREMENTS UNDER THE CONDITIONS SPECIFIED IN MIL-S-8843A:

- (1) OVERLOAD: AC AND DC.
- (2) LIFE:
 - a. ELECTRICAL: 20,000 CYCLES.
 - b. MECHANICAL: 40,000 CYCLES.
- (3) VIBRATION: 10 TO 500 CPS AT 10G.
- (4) SHOCK: 50G, 6 MILLISECOND PULSE DURATION.
- (5) ACCELERATION: 20G
- (6) SALT SPRAY: 100 HOURS.
- (7) HUMIDITY.
- (8) SAND AND DUST.
- (9) SEALING.
- (10) TEMPERATURE: MINUS 55°C TO PLUS 85°C.
- (11) TERMINAL STRENGTH: 5 POUNDS
- (12) WITHSTANDING VOLTAGE.
- (13) MINIMUM CONTACT RATING: 30 MICROAMP AT 50 MILLIVOLTS.

B. CONTACT RATINGS:

- (1) MAXIMUM CONTACT RATINGS: SHALL BE AS SHOWN IN TABLE II.
- (2) MINIMUM CONTACT RATINGS: SHALL BE 25 MICROAMPS AT 5 MILLIVOLTS AC OR DC (CONTACT RESISTANCE SHALL BE 50 OHMS MAXIMUM AT THIS CONDITION).

TABLE I

NASA DASH NUMBER	TYPE	NO. POLES	CIRCUIT WITH TOGGLE LEVER IN			MANUFACTURER'S PART NUMBER (FOR REFERENCE)
			ONE EXTREME POSITION	CENTER POSITION	OTHER EXTREME POSITION LOCKING TAB SIDE	
-001	1	1	ON	OFF	ON	8866 K1
-002	1	1	MOM-ON	OFF	MOM-ON	K2
-003	1	1	ON	OFF	MOM-ON	K3
-004	1	1	ON	NONE	ON	K4
-005	1	1	ON	OFF	NONE	K5
-006	1	1	NONE	OFF	MOM-ON	K6
-007	1	1	ON	NONE	OFF	K7
-008	1	1	NONE	ON	MOM-ON	K8
-101	2	2	ON	OFF	ON	8867 K1
-102	2	2	MOM-ON	OFF	MOM-ON	K2
-103	2	2	ON	OFF	MOM-ON	K3
-104	2	2	ON	NONE	ON	K4
-105	2	2	ON	OFF	NONE	K5
-106	2	2	NONE	OFF	MOM-ON	K6
-107	2	2	ON	NONE	OFF	K7
-108	2	2	NONE	ON	MOM-ON	K8

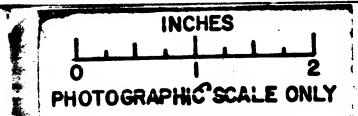
TABLE II

CONTACT RATINGS, MAXIMUM		
TYPE LOAD	VOLTAGE	AMPERAGE
RESISTIVE	28 V. DC	4
	50 V. DC	1
	115 V. AC	3
INDUCTIVE	28 V. DC	1
	50 V. DC	-
	115 V. AC	1

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
 $\pm .005$ $\pm .02$
DO NOT SCALE THIS DRAWING
MATERIAL
SEE REQUIREMENTS
HEAT TREATMENT
NONE
FINAL FINISH
SEE REQUIREMENTS

NEXT ASSY USED ON APPLICATION

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Bender</i> DATE <i>3-DEC-63</i> CHECKED <i>Ed Foster</i> DATE <i>4 DEC 63</i> APPROVAL <i>L. G. Gorman</i> <i>12/17/63</i>		SWITCH, TOGGLE, MINIATURE SPECIFICATION CONTROL DRAWING	
NASA APPROVAL <i>W. J. ...</i> <i>12/17/63</i>		CODE IDENT NO. C	NASA DRAWING NO. 1016265
MIT APPROVAL <i>W. J. ...</i> <i>12/17/63</i>		SCALE NONE	WT SHEET 3 OF 3



1016265

REVISIONS

SYM DESCRIPTION DATE APPROVAL

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05212 DATE 12/17/63

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REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- MATERIAL: BODY AND CAP - BRASS PER QQ-B-626 COMP. 22
(SEE TABLE) STAINLESS STEEL, TYPE 303 PER QQ-S-763
SPRING - STAINLESS STEEL, TYPE 302 PER AMS 5688
- FINISH: STAINLESS STEEL PARTS - PASSIVATE PER MIL-F-14072, E300
- DIMENSIONS: AS SHOWN
- MARKING:

- PACKAGE - INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:

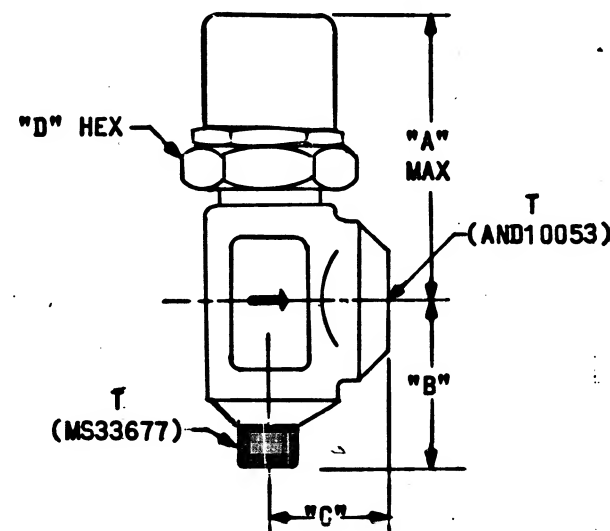
SUPPLIER'S NAME,

NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER,
DATE CODE, OR DATE OF MANUFACTURE.

- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

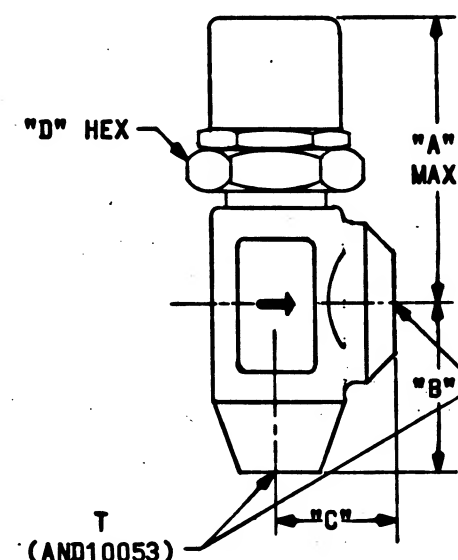
NASA DASH NUMBER	TYPE	MATERIAL	PIPE THD. T	A MAX	B	C	D	PRESSURE RANGE (PSI)	MANUFACTURER PART NUMBER
-001	I	BRASS	1/8	2.375	1.375	.875	1.250	4-15	636B-1-1/8-1
-002	II								637B-1-1/8-1
-003	I	STAINLESS STEEL							646B-1-1/8-1
-004	II								647B-1-1/8-1
-005	I	BRASS	1/4			1.062		10-50	636B-1-1/4-1
-006	II								637B-1-1/4-1
-007	I	STAINLESS STEEL							646B-1-1/4-1
-008	II								647B-1-1/4-1
-009	I	BRASS	1/8			.875		40-125	636B-2-1/8-1
-010	II								637B-2-1/8-1
-011	I	STAINLESS STEEL							646B-2-1/8-1
-012	II								647B-2-1/8-1
-013	I	BRASS	1/4			1.062		40-125	636B-2-1/4-1
-014	II								637B-2-1/4-1
-015	I	STAINLESS STEEL							646B-2-1/4-1
-016	II								647B-2-1/4-1
-017	I	BRASS	1/8			.875		40-125	636B-3-1/8-1
-018	II								637B-3-1/8-1
-019	I	STAINLESS STEEL							646B-3-1/8-1
-020	II								647B-3-1/8-1
-021	I	BRASS	1/4			1.062		40-125	636B-3-1/4-1
-022	II								637B-3-1/4-1
-023	I	STAINLESS STEEL							646B-3-1/4-1
-024	II								647B-3-1/4-1

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.



MALE PIPE THREAD TO FEMALE PIPE THREAD

TYPE I



FEMALE PIPE THREAD TO FEMALE PIPE THREAD

TYPE II

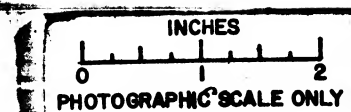
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CLASS B RELEASE TDR No. 05146 DATE

12 DEC 63

THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

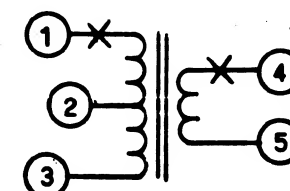
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Bender</i> DATE <i>22 NOV 63</i> CHECKED <i>Ed Foster</i> DATE <i>2 DEC 63</i> APPROVAL <i>L. Johnson</i> DATE <i>12/9/63</i>		VALVE - PRESSURE RELIEF, GUIDED PISTON TYPE	
NASA APPROVAL <i>[Signature]</i> DATE <i>12/10/63</i> MIT APPROVAL <i>[Signature]</i> DATE <i>10/10/63</i>		SPECIFICATION CONTROL DRAWING	
CODE IDENT NO. <i>C</i> SIZE <i>C</i>		NASA DRAWING NO. 1016266	
SCALE NONE WT		SHEET 1 OF 1	



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REQUIREMENTS:

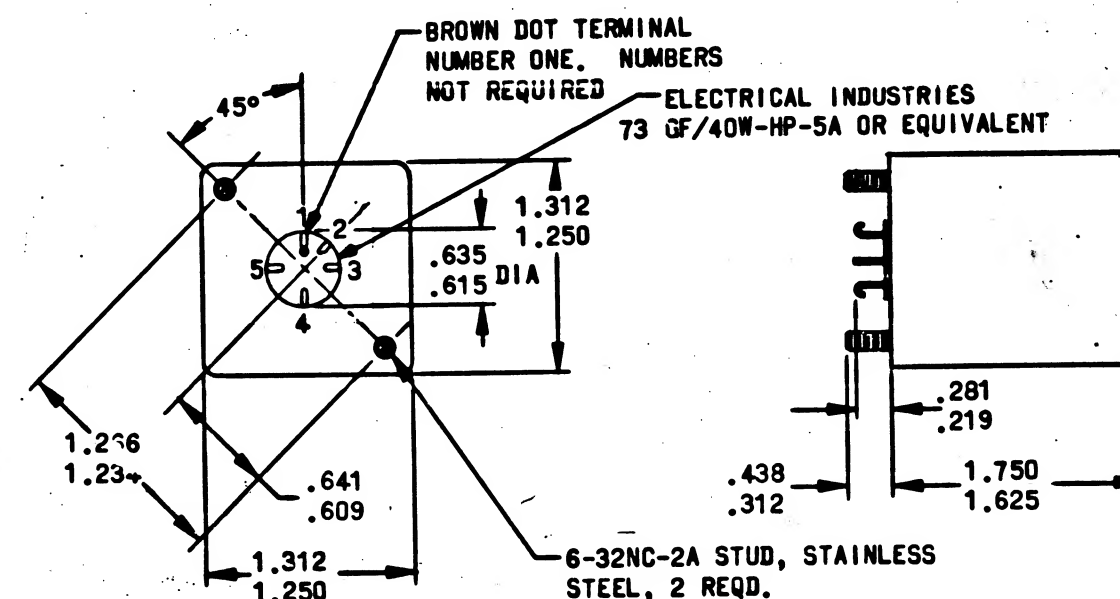
1. GENERAL:
 - A. AIRPAX ELECTRONICS PART NUMBER T-2217
 - B. TRANSFORMER DESIGN PART NUMBER TD-826
 - C. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
 - D. DESIGN TO BE IN CONFORMANCE WITH SPECIFICATION MIL-T-27.
 - E. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
2. INSPECTION AND ACCEPTANCE:
 - A. UNIT SHALL MEET ALL REQUIREMENTS OF TABLE 1.
 - B. COLOR: UNIT SHALL BE FINISHED WITH COLOR 514 OF ANA BULLETIN 157 (INSTRUMENT BLACK).
 - C. MARKING: MARK PERMANENTLY AND LEGIBLY WITH THE NASA DRAWING NUMBER AND REVISION LETTER PLUS ALL MARKING REQUIREMENTS OF MIL-T-27. THE MANUFACTURER'S PART NUMBER MAY APPEAR ON PART AND PACKAGE.
3. DESIGN REQUIREMENTS:
 - A. THE UNIT SHALL MEET ALL REQUIREMENTS OF MIL-T-27 FOR GRADE 4, CLASS R, LIFE EXPECTANCY X, IN AN AMBIENT TEMPERATURE OF 65°C EXCEPT PARAGRAPH 3.1 AND LIFE TEST UNDER GROUP C INSPECTION TESTS WHICH SHALL BE WAIVED.
 - B. ALTITUDE: 10,000 FEET OPERATING, 50,000 FEET NON-OPERATING.
 - C. AMBIENT OPERATING TEMPERATURE RANGE: 0°C TO +65°C
 - D. SOLDER USED FOR ELECTRICAL CONNECTIONS SHALL BE COMPOSITION SN60 PER QQ-S-571C.
 - E. DC UNBALANCE IN PRIMARY: 12.5 MA MAXIMUM.
 - F. MAXIMUM WORKING VOLTAGE: 175 VOLTS INSTANTANEOUS.
 - G. UNIT SHALL BE LAYER WOUND (A BOBBIN MAY BE USED) WITH HEAVY VINYL ACETAL RESIN OR EQUIVALENT.
 - H. V(1-2) AND V(2-3) ARE TO BE APPLIED ALTERNATELY (CLASS B PUSH-PULL) FROM 28V DC SOURCE.



SCHEMATIC DIAGRAM
VOLTAGES AND CURRENT
ARE RMS VALUES UNLESS
OTHERWISE NOTED

FOR INFORMATION ONLY

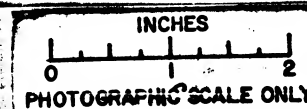
CLASS B RELEASE TDR No. 05393 DATE 12/20/63



SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>J. Barbo</i> DATE <i>6 DEC 63</i> CHECKED <i>Ed. Foster</i> 10 DEC 63 APPROVAL <i>H. G. Schuch</i> 10 DEC 63 APPROVAL <i>L. Gelman</i> 11/16/63		TRANSFORMER, POWER (39.6 CT - 39.6 VOLTS, 800 CPS)	
SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		CODE IDENT NO.	NASA DRAWING NO.
FINAL FINISH NONE		C	1016267
MIT APPROVAL <i>W. J. H. Roberts</i>		SCALE	WT
		SHEET 1 OF 2	

PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING.



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TABLE I
INSPECTION TESTS

NUMBERS IN PARAGRAPH COLUMN REFER TO PARAGRAPH NUMBERS IN SPECIFICATION MIL-T-27	
PARAGRAPH	
4.7.3.2.1	SEALING
4.7.5	DIELECTRIC STRENGTH: APPLY 500 VOLTS (RMS) BETWEEN WINDINGS AND BETWEEN WINDINGS AND CASE.
4.7.6	INDUCED VOLTAGE: APPLY 79 VOLTS, 1600 CPS TO TERMINAL 1 AND 3, SECONDARY OPEN.
4.7.7	INSULATION RESISTANCE: 10,000 MEGOHMS MINIMUM AT 25°C.
4.7.9.3	DC RESISTANCE (AT 25°C): $R_{(1-3)} = 31 \text{ OHMS} \pm 10\%$; $R_{(4-5)} = 18 \text{ OHMS} \pm 20\%$; $R_{(1-2)} = R_{(2-3)} \pm 5\%$.
4.7.9.4	OPEN CIRCUIT INDUCTANCE: SHALL BE 0.75 HENRIES $\pm 20\%$ (1-3) WITH 10 VOLTS, 800 CPS 12.5 MADC (1-3) -0 %
4.7.9.14	POLARITY: TERMINALS 1 AND 4 SHALL BE OF LIKE POLARITY.
4.7.9.17	NO LOAD VOLTAGE RATIO: WITH AN INPUT (1-3) OF 39.6 VOLTS, 800 CPS, THE NO LOAD OUTPUT VOLTAGE RATIOS SHALL BE: $\frac{V_{(1-3)}}{V_{(4-5)}} = 1 : 1 \pm 3\%$; $\frac{V_{(1-2)}}{V_{(2-3)}} = 1 : 1 \pm 1\%$
4.7.10	TEMPERATURE RISE: SHALL NOT EXCEED 40°C WITH 600 OHM LOAD (4-5) AND RATED (28V DC APPLIED ALTERNATELY TO EACH HALF PRIMARY) INPUT. (SAMPLE INSPECTION)
	LEAKAGE INDUCTANCE: 5 MILLIHENRIES MAXIMUM (1-3) WITH 3 VOLTS, 800 CPS (1-3) SECONDARY WINDING SHORTED.

1016267

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL

FOR INFORMATION ONLY

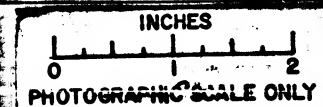
CLASS B RELEASE TDR No. 05303 DATE

12/20/63

MASTER

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		\pm \pm \pm
		DO NOT SCALE THIS DRAWING
		MATERIAL
		HEAT TREATMENT
		FINAL FINISH
NEXT ASSY	USED ON	
APPLICATION		

QTY REQ	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>J. Parks</i> DATE 6 DEC 63 CHECKED <i>Ed Foster</i> 10 DEC 63 APPROVAL <i>J. Plachuck</i> 10 DEC 63 APPROVAL <i>J. Plachuck</i> 12/17/63		TRANSFORMER, POWER (39.6 CT - 39.6 VOLTS, 800 CPS) SPECIFICATION CONTROL DRAWING	
NASA APPROVAL <i>[Signature]</i> MIT APPROVAL <i>[Signature]</i>		CODE IDENT NO. SIZE C	NASA DRAWING NO. 1016267
		SCALE NONE WT	SHEET 2 OF 2



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

- BODY: MOLDED GLASS FILLED DIALLYL PHTHALATE, TYPE GD-I-30 PER MIL-M-198-33.
- TERMINAL: BRASS
- HEX BASE AND INSERT: BRASS

(2) FINISH:

- TERMINAL: HOT SOLDER DIPPED OR PLATED (40 TO 70% TIN CONTENT).
- HEX BASE AND INSERT: PLATED TO RESIST CORROSION.

(3) DIMENSIONS: IN PICTURE AND IN TABLE.

(4) MARKING:

- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:

SUPPLIER'S NAME

NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.

SUPPLIER'S LOT OR SERIAL NUMBER.

- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

3. APPLICATION DATA (FOR REFERENCE):

A. BREAKDOWN VOLTAGE: IN TABLE.

NASA DASH NUMBER	DIMENSIONS				BREAKDOWN VOLTAGE (REF) (VOLTS AC (RMS))	MANUFACTURER'S CATALOG ITEM
	L	B	M (REF)	T (REF)		
-001	.62	.38	.06	.16	6000	BMT-12-M
-002						BMT-12-6-M
-003						SBMT-12-M
-004	.56	.50	.12	.22	9000	SBMT-12-6-M
-005						BMT-16-M
-006	.75					BMT-16-6-M
-007		.53	.16	.22	10000	SBMT-16-M
-008	.69					SBMT-16-6-M
-009						BMT-17-M
-010	.78	.59	.22	.22	12000	BMT-17-6-M
-011						SBMT-17-M
-012	.72					SBMT-17-6-M
-013		.59	.22	.22	12000	BMT-19-M
-014	.84					SBMT-19-6-M
-015						SBMT-19-M
-016	.78					SBMT-19-6-M

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

NEXT ASSY USED ON APPLICATION

1016270

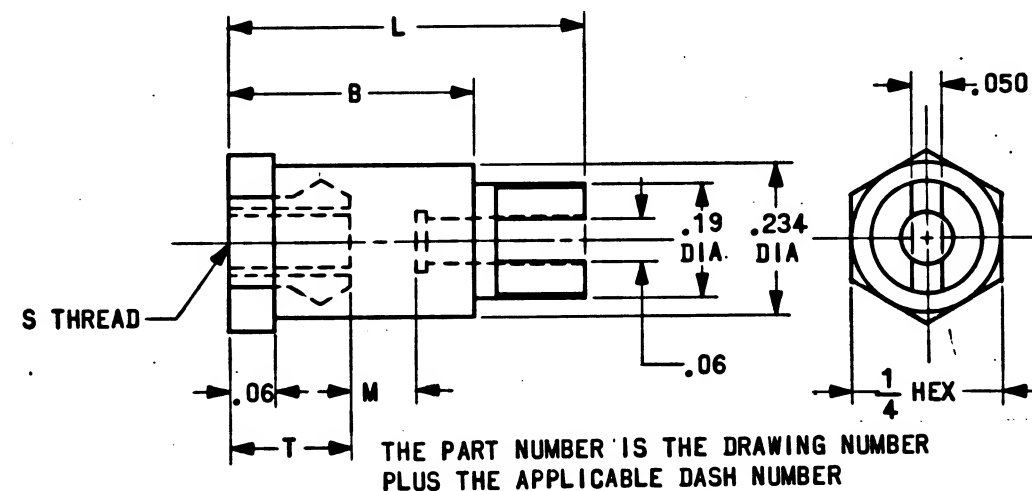
REVISIONS

SYM DESCRIPTION DATE APPROVAL

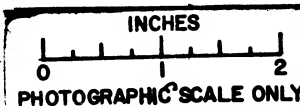
FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05212 DATE

12/17/63



QTY REQ	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± .005 ± .02 DO NOT SCALE THIS DRAWING		DRAWN <i>Bender</i> DATE <i>8-DEC-63</i> CHECKED <i>Ed Foster</i> 9 Dec 63 APPROVAL <i>Ed Foster</i> 10 Dec 63 APPROVAL <i>Ed Foster</i> 12/17/63	
SEE REQUIREMENTS		TERMINAL, STUD (INSULATED, INSERT, FORKED)	
HEAT TREATMENT NONE		SPECIFICATION CONTROL DRAWING	
FINAL FINISH SEE REQUIREMENTS		NASA APPROVAL <i>Ed Foster</i> 12/17/63	NASA DRAWING NO. 1016270
		MIT APPROVAL <i>Ed Foster</i> 12/17/63	CODE IDENT NO. SIZE C
			SCALE NONE WT
			SHEET 1 OF 1



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.

2. INSPECTION AND ACCEPTANCE:

A. ELECTRICAL REQUIREMENTS:

- (1) RATED VOLTAGE: $115 \pm 10V$ RMS, 60 ± 3 CPS
(2) RATED POWER: PER TABLE

B. MECHANICAL REQUIREMENTS:

- (1) LEADS: NO. 20 AWG, STRANDED NICKEL, TEFLON TAPE AND ASBESTOS WRAPPED UNDER FIBERGLASS BRAID
(2) CONSTRUCTION: STAINLESS STEEL CARTRIDGE, 1/4 INCH BRASS BUSHING. CARTRIDGE SEALED AND BUSHING ATTACHED WITH SILVER SOLDER.

(3) MARKING:

- (a) PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA PART NUMBER, PLUS DASH NUMBER AND REVISION LETTER, POWER AND VOLTAGE RATING.
(b) PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION: SUPPLIER'S NAME, NASA PART NUMBER AND REVISION LETTER, SUPPLIER'S LOT OR SERIAL NUMBER, DATE CODE, OR DATE OF MANUFACTURE.
(c) MANUFACTURER'S PART NUMBER OR SYMBOL MAY APPEAR ON THE PART OR PACKAGE.

3. DESIGN REQUIREMENTS:

- A. INSULATION RESISTANCE: 20 MEGOHMS MIN. BETWEEN ELEMENT AND CASE.

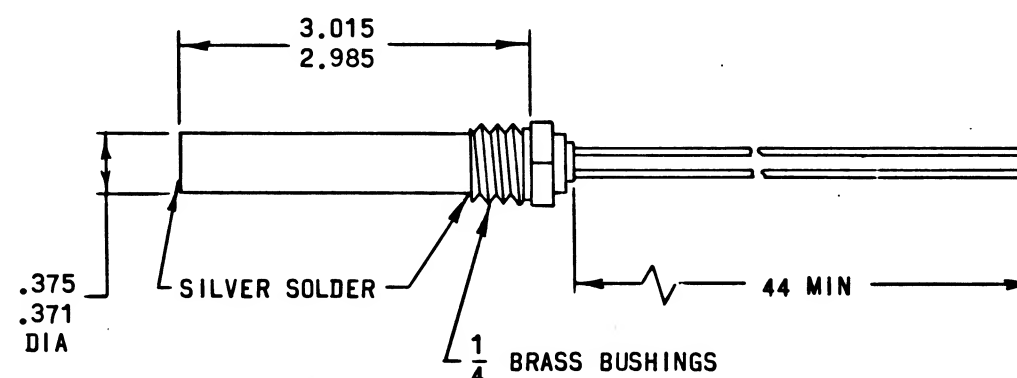
NASA DASH NUMBER	POWER RATING (WATTS)	MANUFACTURER'S PART NUMBER (FOR REF)
-001	100	13E0050

THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

1016271

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED AND UPGRADED TO CLASS 'A' PER TDRR 15390	14 JAN 65	EF



QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>J. DeLore</i> DATE 1 APR 64 CHECKED <i>Ed Foster</i> 6 APR 64 APPROVAL <i>W. Conner</i> 6 APR 64 APPROVAL <i>W. Conner</i> 13 APR 64		HEATER-IMMERSION 100 WATT, 115 VOLT	
SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		NASA APPROVAL <i>W. J. R...</i> 13 APR 64	CODE IDENT NO. SIZE C 1016271
FINAL FINISH NONE		MIT APPROVAL <i>W. J. R...</i> 13 APR 64	NASA DRAWING NO.
NEXT ASSY	USED ON	SCALE NONE	WT
APPLICATION		SHEET 1 OF 1	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER. THE USER OF SUCH DATA SHALL BE RESPONSIBLE FOR OBTAINING NECESSARY PERMISSIONS FROM THE HOLDER OF ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.

2. INSPECTION AND ACCEPTANCE:

A. ELECTRICAL REQUIREMENTS:

- (1) RATED VOLTAGE: $115 \pm 10V$ RMS, 60 ± 3 CPS
(2) RATED POWER: PER TABLE

B. MECHANICAL REQUIREMENTS:

- (1) LEADS: NO.20 AWG, STRANDED NICKEL, TEFLON TAPE AND ASBESTOS WRAPPED UNDER FIBERGLASS BRAID
(2) CONSTRUCTION: STAINLESS STEEL CARTRIDGE, 1/4 INCH BRASS BUSHING, CARTRIDGE SEALED AND BUSHING ATTACHED WITH SILVER SOLDER.

(3) MARKING:

- (a) PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA PART NUMBER, PLUS DASH NUMBER AND REVISION LETTER, POWER AND VOLTAGE RATING.
(b) PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION: SUPPLIER'S NAME, NASA PART NUMBER AND REVISION LETTER, SUPPLIER'S LOT OR SERIAL NUMBER, DATE CODE, OR DATE OF MANUFACTURE.
(c) MANUFACTURER'S PART NUMBER OR SYMBOL MAY APPEAR ON THE PART OR PACKAGE.

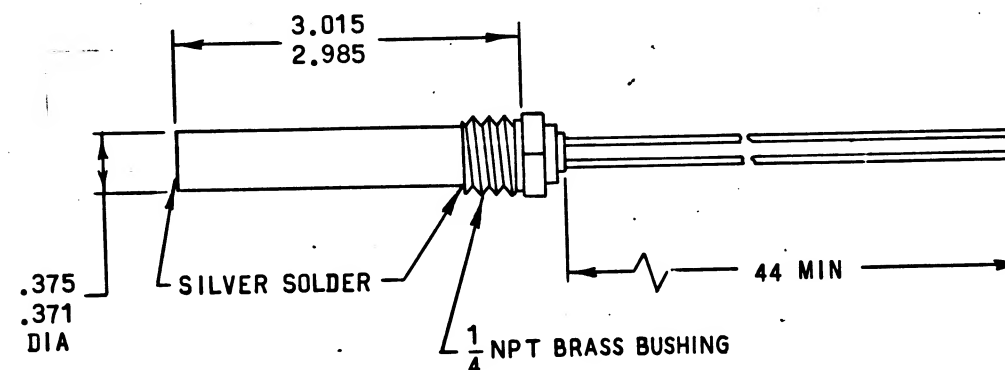
3. DESIGN REQUIREMENTS:

- A. INSULATION RESISTANCE: 20 MEGOHMS MIN. BETWEEN ELEMENT AND CASE.

NASA DASH NUMBER	POWER RATING (WATTS)	MANUFACTURER'S PART NUMBER (FOR REF)
-001	100	13E0050

THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.



QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS CONTRACT NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>J. Molinski</i> DATE 1 APR 64 CHECKED <i>Ed Foster</i> 6 APR 64 APPROVAL <i>W. Conner</i> 6 APR 64		HEATER-IMMERSION 100 WATT, 115 VOLT	
APPROVAL <i>W. Conner</i> 6 APR 64		SPECIFICATION CONTROL DRAWING	
NASA APPROVAL <i>W. J. R. R. R.</i> 13-64		CODE IDENT NO.	SIZE
MIT APPROVAL <i>W. J. R. R. R.</i> 13-64		C	1016271
SCALE NONE		WT	SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. ELECTRICAL REQUIREMENTS:

- RATED VOLTAGE: $115 \pm 10V$ RMS, 60 ± 3 CPS
- RATED POWER: PER TABLE

B. MECHANICAL REQUIREMENTS:

- LEADS: NO.20 AWG. STRANDED NICKEL, TEFLON TAPE AND ASBESTOS WRAPPED UNDER FIBERGLASS BRAID
- CONSTRUCTION: STAINLESS STEEL CARTRIDGE, 1/4 INCH BRASS BUSHING. CARTRIDGE SEALED AND BUSHING ATTACHED WITH SILVER SOLDER.

(3) MARKING:

- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA PART NUMBER, PLUS DASH NUMBER AND REVISION LETTER, POWER AND VOLTAGE RATING.
- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION: SUPPLIER'S NAME, NASA PART NUMBER AND REVISION LETTER, SUPPLIER'S LOT OR SERIAL NUMBER, DATE CODE, OR DATE OF MANUFACTURE.
- MANUFACTURER'S PART NUMBER OR SYMBOL MAY APPEAR ON THE PART OR PACKAGE.

3. DESIGN REQUIREMENTS:

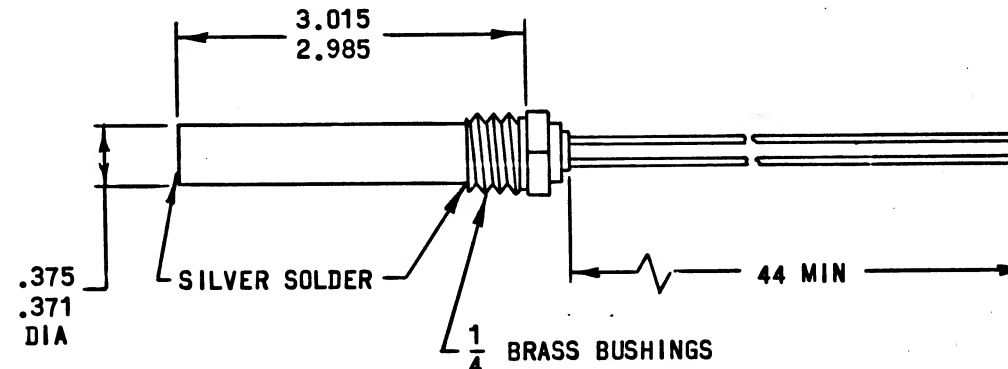
- INSULATION RESISTANCE: 20 MEGOHMS MIN. BETWEEN ELEMENT AND CASE.

NASA DASH NUMBER	POWER RATING (WATTS)	MANUFACTURER'S PART NUMBER (FOR REF)
-001	100	13E0050

THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

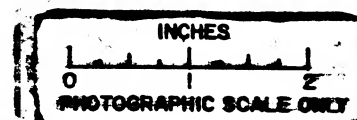
		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		\pm \pm \pm
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		NONE
NEXT ASSY	USED ON	
APPLICATION		



FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 11586 DATE 8/13/64

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
		LIST OF MATERIALS	
	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Contract NAS 9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
	DRAWN <i>J. Molokai</i> DATE <i>1 APR 64</i> CHECKED <i>Ed Foster</i> <i>6 APR 64</i> APPROVAL <i>W. J. R. King</i> <i>6 APR 64</i> APPROVAL <i>W. J. R. King</i> <i>6 APR 64</i>	HEATER-IMMERSION 100 WATT, 115 VOLT	
	NASA APPROVAL <i>W. J. R. King</i> <i>13-64</i> MIT APPROVAL <i>W. J. R. King</i> <i>13-64</i>	SPECIFICATION CONTROL DRAWING CODE IDENT NO. SIZE C 1016271	NASA DRAWING NO.
		SCALE NONE WT	SHEET 1 OF 1



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MARKING:

- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER
DATE CODE, OR DATE OF MANUFACTURE.
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

NASA DASH NUMBER	MANUFACTURER'S PART NUMBER
-001	OVF2-A

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± ± ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		HEAT TREATMENT
NEXT ASSY	USED ON	FINAL FINISH
APPLICATION		

1016272 A

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REPLACED WITH CHANGE BY REVISION B PER TDRR 22913	8 OCT 65	JWP

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05303 DATE 12/20/63

A REPLACED WITH CHANGE BY REV B

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Bender</i> DATE <i>8 DEC 63</i>		VALVE - AIR BLEED	
CHECKED <i>Ed Foster</i> 9 DEC 63		SPECIFICATION CONTROL DRAWING	
APPROVAL <i>J. V. WEAN</i> 9 DEC 63		CODE IDENT NO. SIZE	
APPROVAL <i>C. J. J. J.</i> 12/1/63		NASA DRAWING NO. 1016272	
NASA APPROVAL <i>Bender</i>		SCALE NONE	WT
MIT APPROVAL <i>W. J. J. J.</i> 12/1/63		SHEET 1 OF 1	

INCHES

0 1 2

PHOTOGRAPHIC SCALE ONLY

NOTICE - UNLESS OTHERWISE SPECIFIED, DIMENSIONS, SPECIFICATIONS, OR OTHER DATA ARE GIVEN FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION. THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY MANNER SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LACERATING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY INVENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REPLACED WITH CHANGE BY REV. B PER CM-194601 REVISED PER TDR 06629	27 JAN 64 2-26-64	J.B. LWK

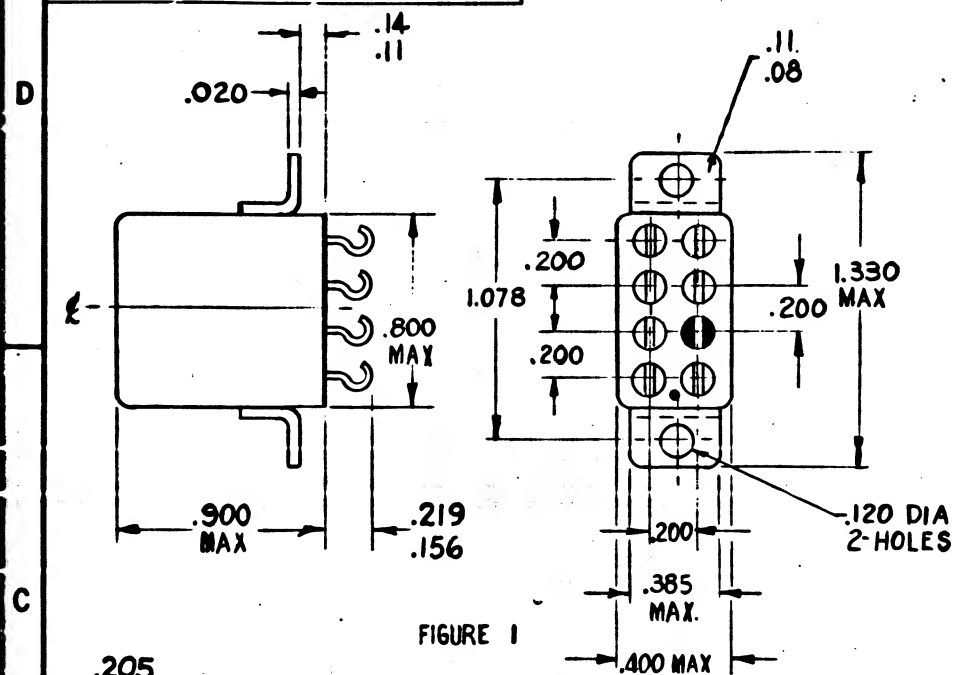


FIGURE 1

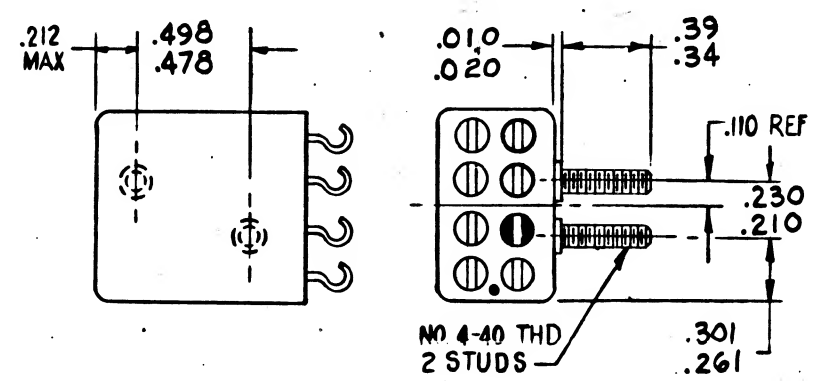


FIGURE 3

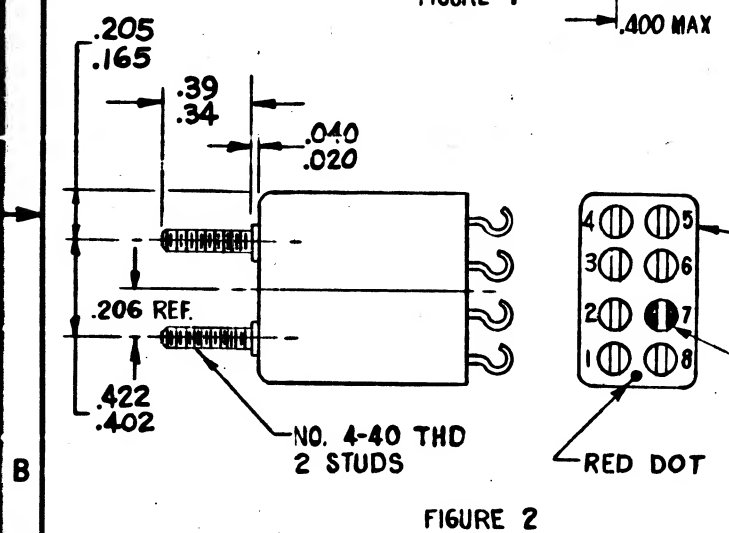


FIGURE 2

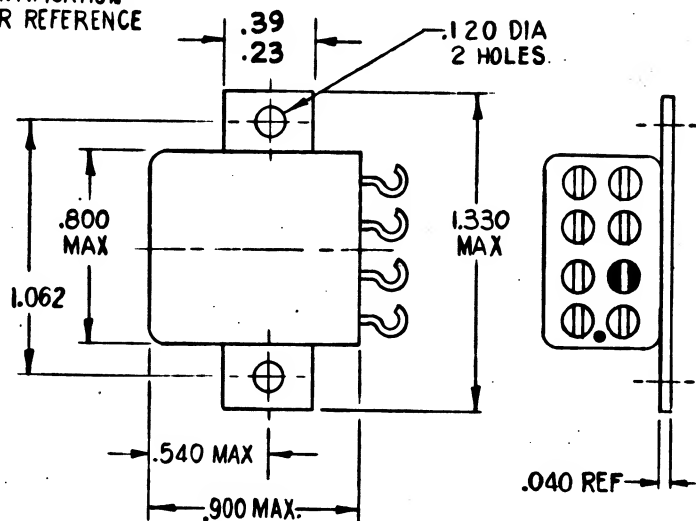
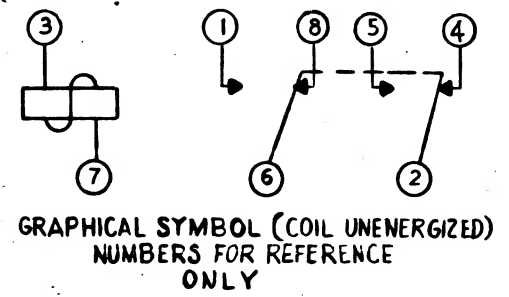


FIGURE 4



GRAPHICAL SYMBOL (COIL UNENERGIZED)
NUMBERS FOR REFERENCE
ONLY

PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING.

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05682 DATE 1/7/64

A	A	-
SHEET 1	SHEET 2	SHEET 3
REVISION STATUS OF SHEETS		

NASA DASH NUMBER	MANUFACTURER'S PART NUMBER	MOUNTING TYPE
-001	RP7640G104	SIDE STUDS (FIG. 3)
-002	RP7633G126	TOP STUDS (FIG. 2)
-003	RP7632G 99	SIDE BRACKETS (FIG. 1)
-004	RP9896G 76	VERTICAL BRACKET (FIG. 4)

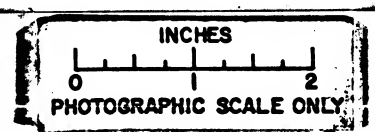
REPLACED WITH CHANGE BY REV B

THE COMPLETE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

APPLICATION	USED ON
NEXT ASSY	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± ±.005 ±
DO NOT SCALE THIS DRAWING
MATERIAL
HEAT TREATMENT
FINAL FINISH

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>[Signature]</i> DATE 16 Dec 63 CHECKED <i>[Signature]</i> 18 Dec 63 APPROVAL <i>[Signature]</i> 16/64		RELAY - ARMATURE (2 PDT, 26.5 VOLTS DC, CRYSTAL CAN CASE)	
NASA APPROVAL <i>[Signature]</i>		SPECIFICATION CONTROL DRAWING	
MIT APPROVAL <i>[Signature]</i>		CODE IDENT NO. SIZE	NASA DRAWING NO.
		C	1016273
		SCALE None	WT
		SHEET 1 OF 3	



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REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
- THIS UNIT SHALL MEET ALL THE APPLICABLE PARAGRAPHS OF MIL-R-5757 WITH THE FOLLOWING QUALIFICATIONS.

2. INSPECTION AND ACCEPTANCE:

- CONTACT RESISTANCE: .050 OHM MAX. INITIALLY (.100 OHM MAX. AFTER LIFE) WHEN MEASURED WITH .100 AMPERE AND 6 VOLTS DC OPEN CIRCUIT.
- OPERATE TIME: 10 MILLISECONDS MAX. OVER THE OPERATING AMBIENT TEMPERATURE RANGE. THIS SHALL INCLUDE BOUNCE TIME.
- RELEASE TIME: 8 MILLISECONDS MAX. OVER THE OPERATING AMBIENT TEMPERATURE RANGE. THIS SHALL INCLUDE BOUNCE TIME.

D. MARKING:

- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE FOLLOWING:

- NASA PART NUMBER, PLUS DASH NUMBER AND REVISION LETTER.
- SUPPLIER'S NAME OR SYMBOL, AND SERIAL NUMBER OR LOT NUMBERS.
- CIRCUIT DIAGRAM WITH TERMINAL DESIGNATION MARK.
- DC COIL RESISTANCE.
- RATED COIL VOLTAGE.
- TERMINAL IDENTIFICATION MARK (COLORED DOT OR OTHER MARKING) ON HEADER.

- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:

- SUPPLIER'S NAME.
- NASA PART NUMBER, PLUS DASH NUMBER, AND REVISION LETTER.
- SUPPLIER'S LOT OR SERIAL NUMBER.
- DATE CODE OR DATE OF MANUFACTURE.

- SUPPLIER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

- THE FOLLOWING REQUIREMENTS SHALL BE MET UNDER THE CONDITIONS SPECIFIED IN MIL-R-5757D.
- PULL-IN VOLTAGE: 18 VOLTS DC MAX. OVER THE OPERATING AMBIENT TEMPERATURE RANGE.
- DROP-OUT VOLTAGE: 13.5 VOLTS DC MAX. 1.5 VOLTS DC MIN. OVER THE OPERATING AMBIENT TEMPERATURE RANGE.
- DIELECTRIC STRENGTH: SHALL WITHSTAND FOR FIVE SECONDS THE FOLLOWING POTENTIALS AT THE INDICATED LEVELS WITHOUT ARCING, DAMAGE OR BREAKDOWN:

- SEA LEVEL: 1000 VOLTS RMS 60 CPS BETWEEN:
 - CONTACT TERMINALS AND COIL TERMINALS.
 - CONTACT TERMINALS AND CASE.
 - CIRCUITS.

- SEA LEVEL: 500 VOLTS RMS 60 CPS BETWEEN:
 - OPEN CONTACT TERMINALS OF EACH CIRCUIT (RELAY BOTH ENERGIZED AND DE-ENERGIZED)
 - COIL TERMINALS AND CASE.

- 1.3 INCHES OF MERCURY (70,000 FEET), 350 VOLTS RMS 60 CPS BETWEEN:
 - ALL TERMINALS AND CASE.

- INSULATION RESISTANCE: 1000 MEGOHMS MIN. USING A 500 VOLT DC TEST POTENTIAL APPLIED BETWEEN:

- COIL TERMINALS, COMMONLY CONNECTED, AND CASE.
- EACH NORMALLY OPEN CONTACT AND CASE.
- EACH MOVABLE, OR COMMON, CONTACT AND CASE (WITH COIL DE-ENERGIZED).
- ALL CONTACT TERMINALS, COMMONLY CONNECTED, AND THE COIL TERMINALS.

- SEALING (METHOD OPTIONAL):

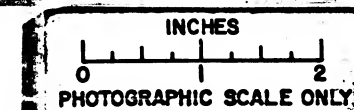
- TEST 1: SHALL BE SUBJECTED TO A TEST WHICH WILL DETERMINE IF THE LEAKAGE RATE IS IN EXCESS OF 10^{-8} CUBIC CENTIMETERS OF HELIUM PER SECOND AT A PRESSURE DIFFERENTIAL OF ONE ATMOSPHERE. A MASS SPECTROMETER, USING HELIUM AS A TEST GAS, IS A SUITABLE MEANS OF PERFORMING THIS TEST. A RADIOACTIVE TRACER METHOD, USING AN INERT, NONTXIC, RADIOACTIVE GAS SUCH AS KRYPTON MAY BE USED AS AN ALTERNATE METHOD. IF THE RADIOACTIVE TRACER METHOD IS USED, THE RELAYS SHALL BE PLACED IN A SEALED TANK AND ADEQUATELY EXPOSED TO THE RADIOACTIVE GAS. AFTER EXPOSURE ALL RESIDUAL RADIOACTIVE MATERIAL SHALL BE REMOVED FROM THE EXTERNAL SURFACES OF THE RELAY. THE LEAK RATE SHALL BE DETERMINED BY MEASURING THE AMOUNT OF RADIOACTIVE MATERIAL WHICH HAS ENTERED THE RELAY ENCLOSURE. THIS DATA SHALL THEN BE CONVERTED TO A 10 YEAR LEAK RATE FIGURE BASED ON THE CONSTANTS FOR HELIUM APPLIED AT A ONE ATMOSPHERE DIFFERENTIAL PRESSURE.

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05682 DATE 1/7/64

REPLACED WITH CHANGE BY REV B

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>J.R. Sullivan</i> DATE <i>12 Dec 63</i> CHECKED <i>E.J. Foster</i> DATE <i>18 Dec 63</i> APPROVAL <i>L. J. Schuman</i> DATE <i>1/4/64</i>		RELAY - ARMATURE (2 PDT, 26.5 VOLTS DC, CRYSTAL CAN CASE)	
NASA APPROVAL <i>[Signature]</i> MIT APPROVAL <i>[Signature]</i>		SPECIFICATION CONTROL DRAWING CODE IDENT NO. <i>C</i> SIZE <i>1016273</i>	
SCALE NONE		SHEET 2 OF 3	



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OMISSION, MISSTATEMENT, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFERRING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

1016273

REVISIONS

SYM DESCRIPTION DATE APPROVAL

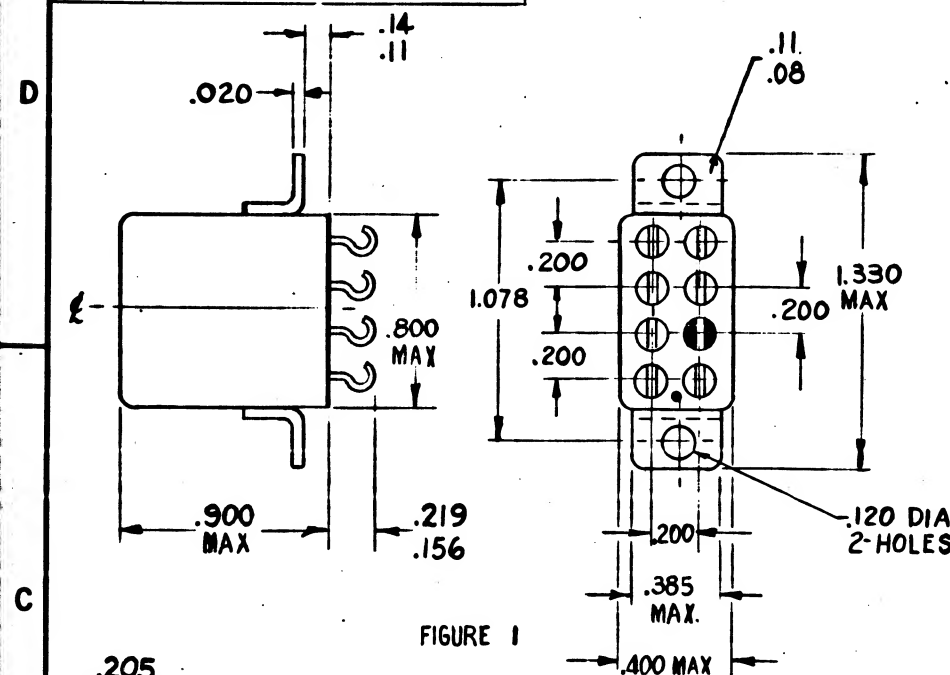


FIGURE 1

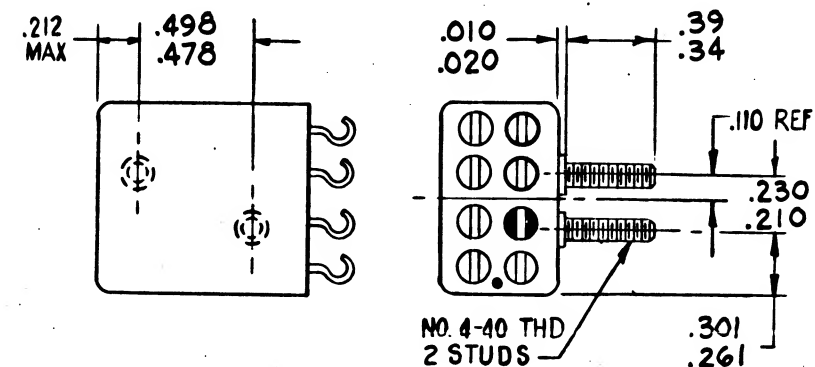


FIGURE 3

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05682 DATE 1/7/64

SHEET 1	SHEET 2	SHEET 3
REVISION STATUS OF SHEETS		

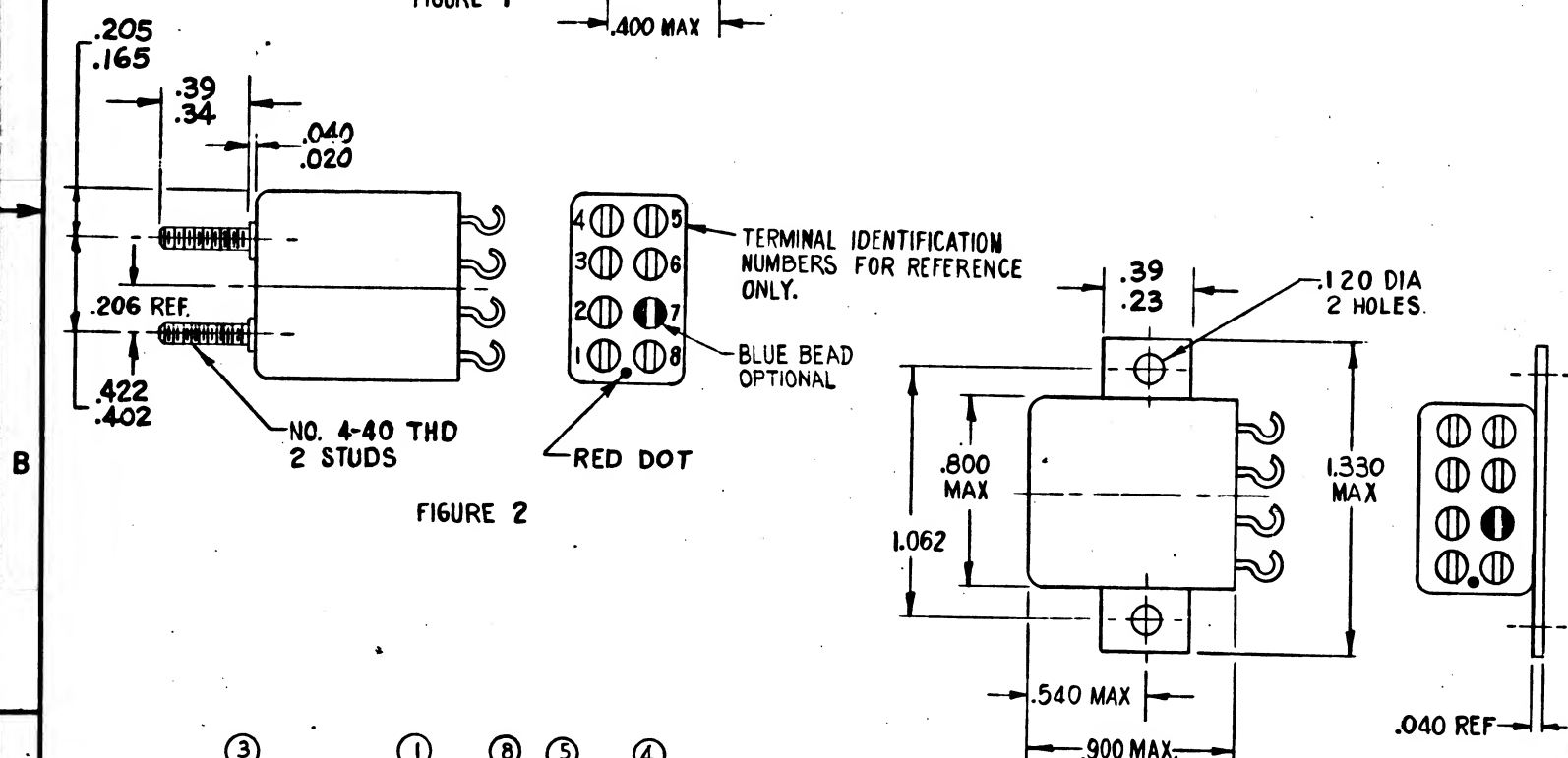
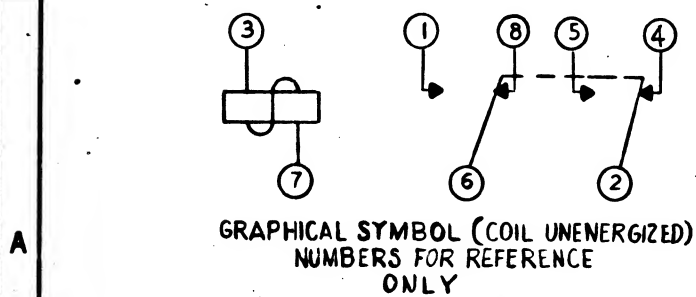


FIGURE 2

FIGURE 4

NASA DASH NUMBER	MANUFACTURER'S PART NUMBER	MOUNTING TYPE
-001	RP7640G104	SIDE STUDS (FIG. 3)
-002	RP7633G126	TOP STUDS (FIG. 2)
-003	RP7632G 99	SIDE BRACKETS (FIG. 1)
-004	RP9896G 76	VERTICAL BRACKET (FIG. 4)

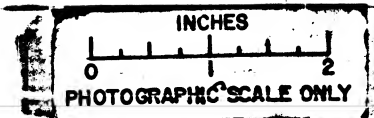
THE COMPLETE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.



PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>J. F. F.</i> DATE 18 Dec 63 CHECKED <i>J. F. F.</i> 18 Dec 63 APPROVAL <i>J. F. F.</i> 18 Dec 63		RELAY - ARMATURE (2 PDT, 26.5 VOLTS DC, CRYSTAL CAN CASE)	
HEAT TREATMENT		SPECIFICATION CONTROL DRAWING	
FINAL FINISH		CODE IDENT NO. SIZE C	
NEXT ASSY	USED ON	NASA DRAWING NO. 1016273	
APPLICATION		SCALE None WT	
MIT APPROVAL <i>W. K. Suffer</i> 1/6/64		SHEET 1 OF 3	



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REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
- THIS UNIT SHALL MEET ALL THE APPLICABLE PARAGRAPHS OF MIL-R-5757 WITH THE FOLLOWING QUALIFICATIONS.

2. INSPECTION AND ACCEPTANCE:

- CONTACT RESISTANCE: .050 OHM MAX. INITIALLY (.100 OHM MAX. AFTER LIFE) WHEN MEASURED WITH .100 AMPERE AND 6 VOLTS DC OPEN CIRCUIT.
- OPERATE TIME: 10 MILLISECONDS MAX. OVER THE OPERATING AMBIENT TEMPERATURE RANGE. THIS SHALL INCLUDE BOUNCE TIME.
- RELEASE TIME: 8 MILLISECONDS MAX. OVER THE OPERATING AMBIENT TEMPERATURE RANGE. THIS SHALL INCLUDE BOUNCE TIME.

D. MARKING:

- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE FOLLOWING:
 - NASA PART NUMBER, PLUS DASH NUMBER AND REVISION LETTER.
 - SUPPLIER'S NAME OR SYMBOL, AND SERIAL NUMBER OR LOT NUMBERS.
 - CIRCUIT DIAGRAM WITH TERMINAL DESIGNATION MARK.
 - DC COIL RESISTANCE.
 - RATED COIL VOLTAGE.
 - TERMINAL IDENTIFICATION MARK (COLORED DOT OR OTHER MARKING) ON HEADER.
 - PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
 - SUPPLIER'S NAME.
 - NASA PART NUMBER, PLUS DASH NUMBER, AND REVISION LETTER.
 - SUPPLIER'S LOT OR SERIAL NUMBER.
 - DATE CODE OR DATE OF MANUFACTURE.
 - SUPPLIER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.
- E. THE FOLLOWING REQUIREMENTS SHALL BE MET UNDER THE CONDITIONS SPECIFIED IN MIL-R-5757D.
- F. PULL-IN VOLTAGE: 18 VOLTS DC MAX. OVER THE OPERATING AMBIENT TEMPERATURE RANGE.
- G. DROP-OUT VOLTAGE: 13.5 VOLTS DC MAX. 1.5 VOLTS DC MIN. OVER THE OPERATING AMBIENT TEMPERATURE RANGE.
- H. DIELECTRIC STRENGTH: SHALL WITHSTAND FOR FIVE SECONDS THE FOLLOWING POTENTIALS AT THE INDICATED LEVELS WITHOUT ARCING, DAMAGE OR BREAKDOWN:

- SEA LEVEL: 1000 VOLTS RMS 60 CPS BETWEEN:
 - CONTACT TERMINALS AND COIL TERMINALS.
 - CONTACT TERMINALS AND CASE.
 - CIRCUITS.
- SEA LEVEL: 500 VOLTS RMS 60 CPS BETWEEN:
 - OPEN CONTACT TERMINALS OF EACH CIRCUIT (RELAY BOTH ENERGIZED AND DE-ENERGIZED)
 - COIL TERMINALS AND CASE.
- 1.3 INCHES OF MERCURY (70,000 FEET), 350 VOLTS RMS 60 CPS BETWEEN:
 - ALL TERMINALS AND CASE.

J. INSULATION RESISTANCE: 1000 MEGOHMS MIN. USING A 500 VOLT DC TEST POTENTIAL APPLIED BETWEEN:

- COIL TERMINALS, COMMONLY CONNECTED, AND CASE.
- EACH NORMALLY OPEN CONTACT AND CASE.
- EACH MOVABLE, OR COMMON, CONTACT AND CASE (WITH COIL DE-ENERGIZED).
- ALL CONTACT TERMINALS, COMMONLY CONNECTED, AND THE COIL TERMINALS.

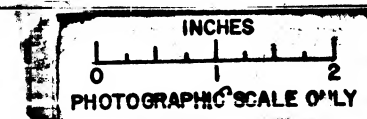
K. SEALING (METHOD OPTIONAL):

- TEST 1: SHALL BE SUBJECTED TO A TEST WHICH WILL DETERMINE IF THE LEAKAGE RATE IS IN EXCESS OF 10^{-8} CUBIC CENTIMETERS OF HELIUM PER SECOND AT A PRESSURE DIFFERENTIAL OF ONE ATMOSPHERE. A MASS SPECTROMETER, USING HELIUM AS A TEST GAS, IS A SUITABLE MEANS OF PERFORMING THIS TEST. A RADIOACTIVE TRACER METHOD, USING AN INERT, NONTXIC, RADIOACTIVE GAS SUCH AS KRYPTON MAY BE USED AS AN ALTERNATE METHOD. IF THE RADIOACTIVE TRACER METHOD IS USED, THE RELAYS SHALL BE PLACED IN A SEALED TANK AND ADEQUATELY EXPOSED TO THE RADIOACTIVE GAS. AFTER EXPOSURE ALL RESIDUAL RADIOACTIVE MATERIAL SHALL BE REMOVED FROM THE EXTERNAL SURFACES OF THE RELAY. THE LEAK RATE SHALL BE DETERMINED BY MEASURING THE AMOUNT OF RADIOACTIVE MATERIAL WHICH HAS ENTERED THE RELAY ENCLOSURE. THIS DATA SHALL THEN BE CONVERTED TO A 10 YEAR LEAK RATE FIGURE BASED ON THE CONSTANTS FOR HELIUM APPLIED AT A ONE ATMOSPHERE DIFFERENTIAL PRESSURE.

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05682 DATE 1/7/64

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MA 02139 CONTRACT NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>J.R. Sullivan</i> DATE 1/2/63 CHECKED <i>E.L. Foster</i> 18 DEC 63 APPROVAL <i>L. G. Johnson</i> 1/6/64		RELAY - ARMATURE (2 PDT, 26.5 VOLTS DC, CRYSTAL CAN CASE)	
DO NOT SCALE THIS DRAWING MATERIAL		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT		NASA APPROVAL <i>[Signature]</i>	CODE IDENT NO. SIZE C 1016273
FINAL FINISH		MIT APPROVAL <i>[Signature]</i>	SCALE NONE WT SHEET 2 OF 3
NEXT ASSY	USED ON		
APPLICATION			



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REQUIREMENTS (CONTINUED):

(2) TEST 11: SHALL BE IMMERSSED IN A CONTAINER OF WATER WITH A SUITABLE WETTING AGENT ADDED. THE CONTAINER SHALL THEN BE PLACED IN A CHAMBER AND EVACUTED TO A PRESSURE OF 1.3 INCHES OF MERCURY. THE IMMERSSED RELAYS SHALL BE CHECKED FOR LEAKAGE AS INDICATED BY BUBBLES EMANATING FROM THE CASE.

3. DESIGN REQUIREMENTS:

A. SWITCHING ACTION: 2 PDT (2 FORM C)

B. CONTACT RATING:

(1) PER POLE: NORMALLY OPEN OR NORMALLY CLOSED.

LOAD	30V DC	115V AC 60 AND 400 CPS
RESISTIVE	2A	1A
INDUCTIVE	1A AT 50 MILLIHENRIES	.5A
OVERLOAD	6A MAX FOR 100 CYCLES	
LAMPLOAD	.25A	.25A

C. OPERATING AMBIENT TEMPERATURE RANGE: -55°C TO +125°C

D. THE FOLLOWING ENVIRONMENTS AND REQUIREMENTS SHALL BE MET UNDER THE CONDITIONS SPECIFIED IN MIL-R-5757D:

- (1) HIGH TEMPERATURE: +85°C
- (2) LOW TEMPERATURE OPERATING: -65°C.
- (3) SHOCK: 50G FOR 11 ± 1 MILLISECOND DURATION.
- (4) RANDOM DROP:
- (5) VIBRATION: 10-500 CPS AT 10G.
- (6) LIFE: 100,000 CYCLES MIN. AT 85°C AND RATED LOAD.
- (7) COIL VOLTAGE: 26.5V DC RATED (30V DC MAX).
- (8) COIL RESISTANCE: 495 OHMS MIN., 880 OHMS MAX AT 25°C.

4. SPECIAL CONDITIONING BY SUPPLIER:

A. MISS TEST:

- (1) MANUFACTURER SHALL SUBJECT RELAYS TO 5000 OPERATIONS AT 5 OPERATIONS PER SECOND OR LESS, 8 MICROAMPERES RESISTIVE LOAD AT 16 MILLIVOLTS MAX.; NOT MORE THAN 72 CONTACTS IN A SINGLE SERIES CIRCUIT. TOTAL CONTACT RESISTANCE SHALL NOT EXCEED 750 OHMS FOR 72 CONTACTS IN SERIES.
- (2) CONTACT RESISTANCE, DROP-OUT VOLTAGE, AND PULL-IN VOLTAGE SHALL BE MEASURED BY THE MANUFACTURER AFTER THE 5000 CYCLE TEST AND JUST PRIOR TO SHIPMENT. CERTIFICATION OF THESE MEASUREMENTS SHALL BE FURNISHED TO THE USER. THE MANUFACTURER SHALL ALSO FURNISH THE USER A TABULATION SHOWING THE NUMBER OF RELAYS SUBJECTED TO 5000 CYCLE TEST, THE NUMBER OF RELAYS FAILING DURING THE 5000 CYCLE TEST, AND THE TIME (OR CYCLES) TO FAILURE. ONE COPY OF THIS INFORMATION SHALL BE SUPPLIED WITH THE PARTS.

1016273

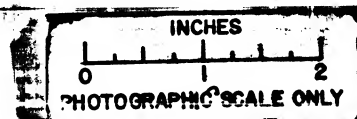
REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05682 DATE 1/7/64

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>B. Sullivan</i> DATE <i>16 Dec 63</i> CHECKED <i>E. F. Fether</i> 18 DEC 63 APPROVAL <i>L. Friedman</i> 16/64		RELAY - ARMATURE (2 PDT, 26.5 VOLTS DC, CRYSTAL CAN CASE)	
HEAT TREATMENT		SPECIFICATION CONTROL DRAWING	
NASA APPROVAL <i>B. Sullivan</i>		CODE IDENT NO.	SIZE
MIT APPROVAL <i>W. G. Fether</i>		C	1016273
APPLICATION		SCALE NONE	WT
		SHEET 3 OF 3	



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REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATION IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

- TUBE: BOROSILICATE GLASS
- FLOAT: CARBOLOY
- FND FITTINGS: STAINLESS STEEL

(2) ACCURACY: $\pm 5\%$ FULL SCALE

(3) DIMENSIONS: SCALE LENGTH 150 mm OTHER PER DRAWING

(4) DESIGN:

- TEMPERATURE: 250°F MAX.
- PRESSURE: 200 PSI MAX.

(5) MARKING:

- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME.
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
DATE CODE, OR DATE OF MANUFACTURE.
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

NASA DASH NUMBER	MAXIMUM FLOW RATE *	MINIMUM FLOW RATE *	MANUFACTURER'S PART NUMBER		
			MODEL	FLOW TUBE	FLOAT
-001	742 CC/MIN	74.2 CC/MIN	1355B	R6-15-A	CARBOLOY
-002	1944 CC/MIN	194.4 CC/MIN	1355B	R6-15-B	CARBOLOY
-003	742 CC/MIN	74.2 CC/MIN	-	R6-15-A	CARBOLOY
-004	1944 CC/MIN	194.4 CC/MIN	-	R6-15-B	CARBOLOY

* WATER AT ROOM TEMPERATURE

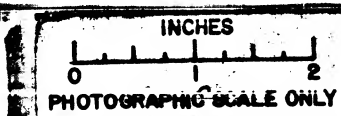
PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± ± ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		NONE
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>J. Sullivan</i> DATE <i>12/20/63</i> CHECKED <i>Ed Foster</i> 11 DEC 63 APPROVAL <i>L. V. WEAN</i> 11 DEC 63 APPROVAL <i>J. Sullivan</i> 12/19/63		FLOWMETER	
NASA APPROVAL <i>[Signature]</i> MIT APPROVAL <i>[Signature]</i>		SPECIFICATION CONTROL DRAWING	
CODE IDENT NO.		SIZE C	NASA DRAWING NO. 1016274
SCALE NONE		WT	SHEET 1 OF 1

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05303 DATE 12/20/63



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS A WARRANTY, LICENSE, OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:
 - A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
 - B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
2. INSPECTION AND ACCEPTANCE:
 - A. MECHANICAL REQUIREMENTS:
 - (1) MATERIAL: STAINLESS STEEL, TYPE 316
 - (2) FINISH: PASSIVATE PER MIL-F-14072, E300
 - (3) DIMENSIONS: AS SHOWN
 - (4) MARKING:
 - a. PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME.
NASA DRAWING NUMBER, DASH NUMBER, AND
REVISION LETTER.
DATE CODE, OR DATE OF MANUFACTURE.
 - b. MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

NASA DASH NUMBER	MALE PIPE SIZE	REDUCED FEMALE PIPE SIZE	A	M	MANUFACTURER'S PART NUMBER
-001	1/8	1/16	1.00	.44	2-RB-1-316
-002	1/4	1/16	.81	.56	4-RB-1-316
-003	1/4	1/8	1.00	.56	4-RB-2-316
-004	3/8	1/16	.84	.68	6-RB-1-316
-005	3/8	1/8	.84	.68	6-RB-2-316
-006	3/8	1/4	1.12	.75	6-RB-4-316

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

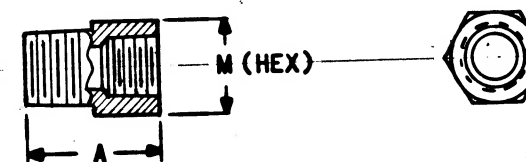
MASTER

1016275

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL

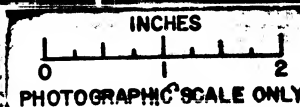
FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05682 DATE 1/7/64



THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>P.W. Dunne</i> DATE <i>12 DEC 63</i> CHECKED <i>W. D. Smith</i> 12 DEC 63 APPROVAL <i>G. J. Gorman</i> 12 DEC 63 APPROVAL <i>G. J. Gorman</i> 1/6/64		FITTING - PIPE, REDUCING BUSHING (MALE TO FEMALE THREAD)	
SEE REQUIREMENTS HEAT TREATMENT NONE FINAL FINISH SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING NASA DRAWING NO. 1016275	
NEXT ASSY	USED ON	SCALE NONE WT	SHEET 1 OF 1
APPLICATION		1	



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY ORIGINATOR WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

REQUIREMENTS:

1. GENERAL:
 - A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
 - B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
2. INSPECTION AND ACCEPTANCE:
 - A. MECHANICAL REQUIREMENTS:
 - (1) MATERIAL: STAINLESS STEEL, TYPE 316
 - (2) FINISH: PASSIVATE PER MIL-F-14072, E300
 - (3) DIMENSIONS: AS SHOWN
 - (4) MARKING:
 - a. PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:

SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER, AND
REVISION LETTER
DATE CODE, OR DATE OF MANUFACTURE
 - b. MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

NASA DASH NUMBER	FEMALE PIPE SIZE	REDUCED FEMALE PIPE SIZE	A	M	MANUFACTURER'S PART NUMBER
-001	1/8	1/16	1.06	.56	2-HRCG-1-316
-002	1/4	1/16	1.22	.75	4-HRCG-1-316
-003	1/4	1/8	1.22	.75	4-HRCG-2-316
-004	3/8	1/16	1.31	.88	6-HRCG-1-316
-005	3/8	1/8	1.31	.88	6-HRCG-2-316
-006	3/8	1/4	1.50	.88	6-HRCG-4-316

PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING.

MASTER

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± ± ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		SEE REQUIREMENTS
NEXT ASSY	USED ON	
APPLICATION		

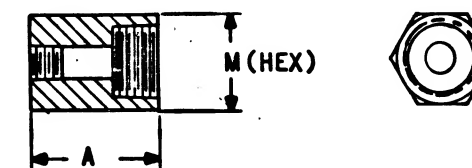
1016276

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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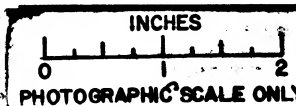
FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05682 DATE 1/7/64



THE PART NUMBER IS THE DRAWING NUMBER
PLUS THE APPLICABLE DASH NUMBER.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>P. Turner</i> DATE <i>10 DEC 63</i>		FITTING - PIPE, HEX REDUCING COUPLING (FEMALE TO FEMALE THREAD)	
CHECKED <i>W. E. B. 12 Dec 63</i>		SPECIFICATION CONTROL DRAWING	
APPROVAL <i>L. G. Brown 12 Dec 63</i>		NASA DRAWING NO. 1016276	
NASA APPROVAL <i>J. B. Brown</i>		CODE IDENT NO.	SIZE
MIT APPROVAL <i>W. E. B. 12 Dec 64</i>		C	C
SCALE NONE		WT	SHEET 1 OF 1



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.

B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN MIL-Q-9858.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL: STAINLESS STEEL, TYPE 316

(2) FINISH: PASSIVATE PER MIL-F-14072, E300

(3) DIMENSIONS: AS SHOWN

(4) MARKING:

a. PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:

SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER, AND
REVISION LETTER.

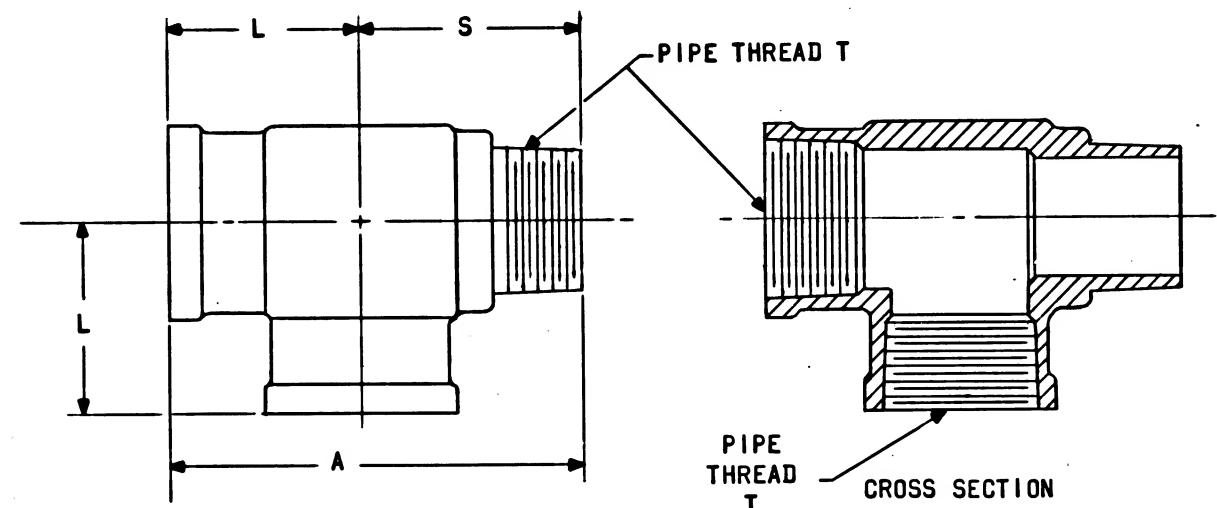
DATE CODE, OR DATE OF MANUFACTURE.

b. MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

NASA DASH NUMBER	T	A	L	S	MANUFACTURER'S PART NUMBER
-001	1/16	1.28	.62	.66	1-ST-316
-002	1/8	1.68	.84	.84	2-ST-316
-004	1/4	1.84	.84	1.00	4-ST-316
-006	3/8	2.12	1.00	1.12	6-ST-316
-008	1/2	2.46	1.12	1.34	8-ST-316
-012	3/4	2.94	1.44	1.50	12-ST-316
-016	1	3.50	1.62	1.88	16-ST-316

PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± ±.02 ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		SEE REQUIREMENTS
NEXT ASSY	USED ON	
APPLICATION		



THE PART NUMBER IS THE DRAWING NUMBER
PLUS THE APPLICABLE DASH NUMBER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
		LIST OF MATERIALS	
	MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
	DWG NO. 1016277 DATE 12/23/63 DRAWN R.W. Turner CHECKED APPROVAL J. K. Jones 1/30/64 APPROVAL L. G. Gorman 1/6/64	FITTING-PIPE, STREET TEE	
	NASA APPROVAL J. Baras MIT APPROVAL W. Guffey 7/6/64	SPECIFICATION CONTROL DRAWING	
		CODE IDENT NO. SIZE C 1016277	NASA DRAWING NO.
		SCALE NONE WT	SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- MATERIAL: STAINLESS STEEL, TYPE 316
- FINISH: PASSIVATE PER MIL-F-14072, E300
- DIMENSIONS: AS SHOWN
- MARKING:

- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:

SUPPLIER'S NAME

NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.

DATE CODE, OR DATE OF MANUFACTURE.

- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

NASA DASH NUMBER	T	A	L	S	MANUFACTURER'S PART NUMBER
-001	1/16	1.28	.62	.66	1-ST-316
-002	1/8	1.68	.84	.84	2-ST-316
-004	1/4	1.84	.84	1.00	4-ST-316
-006	3/8	2.12	1.00	1.12	6-ST-316
-008	1/2	2.46	1.12	1.34	8-ST-316
-012	3/4	2.94	1.44	1.50	12-ST-316
-016	1	3.50	1.62	1.88	16-ST-316

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

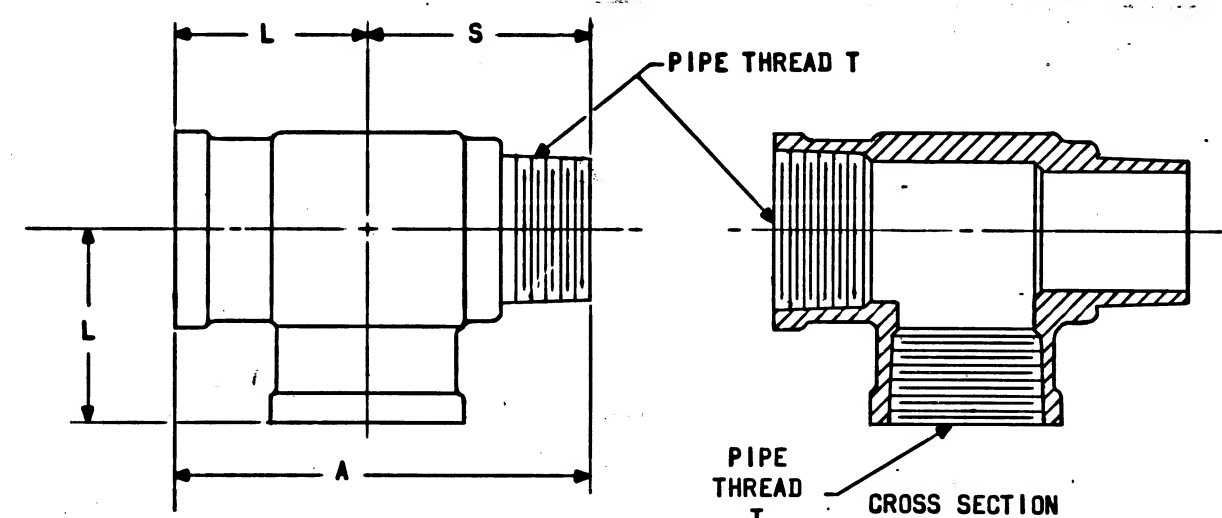
1016277

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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FOR INFORMATION ONLY

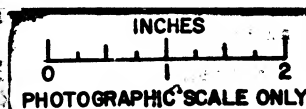
CLASS B RELEASE TDR No. 05682 DATE 1/7/64



THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>R.W. Turner</i> DATE <i>10 DEC 63</i>		FITTING-PIPE, STREET TEE	
CHECKED <i>Antonia</i> DATE <i>13 DEC 63</i>		SPECIFICATION CONTROL DRAWING	
APPROVAL <i>Antonia</i> DATE <i>1/6/64</i>		CODE IDENT NO. SIZE	
NASA APPROVAL <i>Baran</i>		C	
MIT APPROVAL <i>W. J. ...</i>		SCALE NONE WT	
APPLICATION		SHEET 1 OF 1	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± ± .02 ±
DO NOT SCALE THIS DRAWING
MATERIAL
SEE REQUIREMENTS
HEAT TREATMENT
NONE
FINAL FINISH
SEE REQUIREMENTS



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL, ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO

REQUIREMENTS:

1. GENERAL:

A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.

B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN MIL-Q-9858.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL: STAINLESS STEEL, TYPE 316

(2) FINISH: PASSIVATE PER MIL-F-14072, E300

(3) DIMENSIONS: AS SHOWN

(4) MARKING:

a. PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:

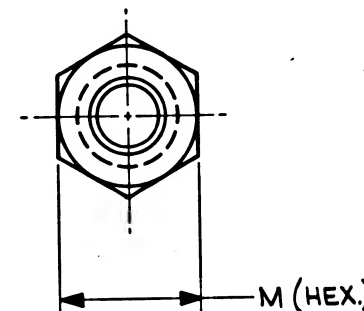
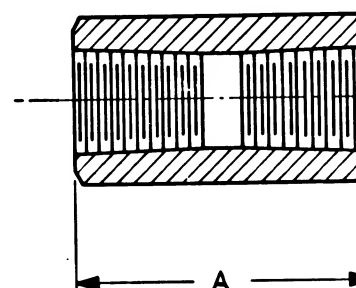
SUPPLIER'S NAME

NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER

DATE CODE, OR DATE OF MANUFACTURE

b. MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

NASA DASH NUMBER	FEMALE PIPE SIZE	A	M	MFG'S PART NUMBER
-001	1/16	.81	.44	1-HCG-316
-002	1/8	.81	.56	2-HCG-316
-004	1/4	1.18	.75	4-HCG-316
-006	3/8	1.25	.88	6-HCG-316
-008	1/2	1.56	1.06	8-HCG-316
-012	3/4	1.62	1.25	12-HCG-316
-016	1	2.00	1.62	16-HCG-316



THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± ± ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
NEXT ASSY	USED ON	FINAL FINISH
		SEE REQUIREMENTS
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>J.R. Sullivan</i> DATE <i>10 DEC 63</i> CHECKED <i>Ed Foster</i> DATE <i>11 DEC 63</i> APPROVAL <i>L. K. Paine</i> DATE <i>11 DEC 63</i> APPROVAL <i>L. J. Gorman</i> DATE <i>11/6/64</i>		FITTING-PIPE, HEX COUPLING (FEMALE THREAD)	
NASA APPROVAL <i>[Signature]</i> MIT APPROVAL <i>W. J. [Signature]</i>		CODE IDENT NO.	NASA DRAWING NO.
		C	1016278
SCALE NONE		WT	SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- MATERIAL: STAINLESS STEEL, TYPE 316
- FINISH: PASSIVATE PER MIL-F-14072, E300
- DIMENSIONS: AS SHOWN
- MARKING:

- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:

SUPPLIER'S NAME

NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER

DATE CODE, OR DATE OF MANUFACTURE

- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

1016278

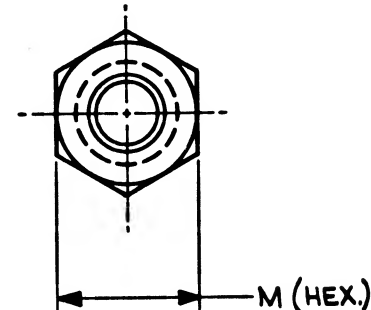
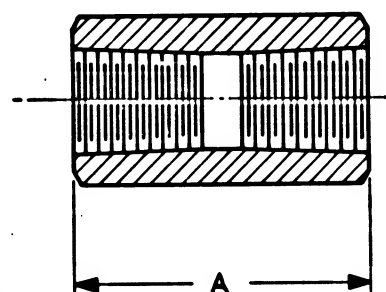
REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05682 DATE 1/7/64

NASA DASH NUMBER	FEMALE PIPE SIZE	A	M	MFG'S PART NUMBER
-001	1/16	.81	.44	1-HCG-316
-002	1/8	.81	.56	2-HCG-316
-004	1/4	1.18	.75	4-HCG-316
-006	3/8	1.25	.88	6-HCG-316
-008	1/2	1.56	1.06	8-HCG-316
-012	3/4	1.62	1.25	12-HCG-316
-016	1	2.00	1.62	16-HCG-316



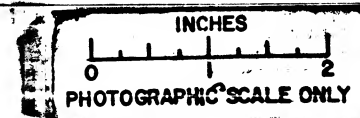
THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

NOTED

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± ± ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		SEE REQUIREMENTS
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
		LIST OF MATERIALS	
		MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS
		DRAWN <i>J.R. Sullivan</i> DATE <i>10 DEC 63</i> CHECKED <i>Ed Foster</i> DATE <i>11 DEC 63</i> APPROVAL <i>L. Goodman</i> DATE <i>11 DEC 63</i> APPROVAL <i>L. Goodman</i> DATE <i>11 DEC 63</i>	FITTING-PIPE, HEX COUPLING (FEMALE THREAD)
		NASA APPROVAL <i>W. Sullivan</i> MIT APPROVAL <i>W. Sullivan</i>	SPECIFICATION CONTROL DRAWING
		CODE IDENT NO. SIZE C	NASA DRAWING NO. 1016278
		SCALE NONE WT	SHEET 1 OF 1



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- MATERIAL: STAINLESS STEEL, TYPE 316.
- FINISH: PASSIVATE PER MIL-F-14072, E300
- DIMENSIONS: AS SHOWN
- MARKING:

- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:

SUPPLIER'S NAME

NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER

DATE CODE, OR DATE OF MANUFACTURE

- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

6229101

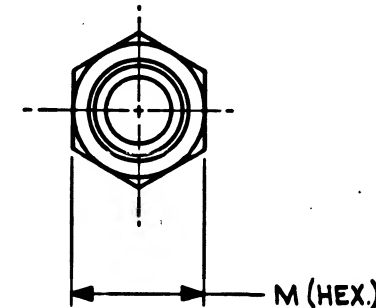
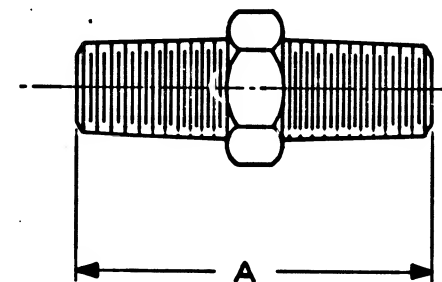
REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05682 DATE 1/7/64

NASA DASH NUMBER	MALE PIPE SIZE	A	M	MFG'S PART NUMBER
-001	1/16	.88	.31	1-HN-316
-002	1/8	1.00	.44	2-HN-316
-004	1/4	1.38	.56	4-HN-316
-006	3/8	1.40	.68	6-HN-316
-008	1/2	1.78	.88	8-HN-316
-012	3/4	1.81	1.06	12-HN-316
-016	1	2.28	1.38	16-HN-316



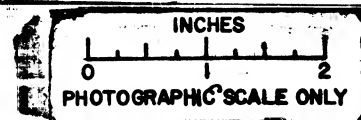
THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

MASTER

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± ± .02 ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		SEE REQUIREMENTS
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
		LIST OF MATERIALS	
	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Contract NAS 9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
	DRAWN <i>J.R. Sullivan</i> DATE <i>10 Dec 63</i> CHECKED <i>Ed Foster</i> 11 DEC 63 APPROVAL <i>Ed Foster</i> 11 DEC 63 APPROVAL <i>Ed Foster</i> 11 DEC 63	FITTING-PIPE, HEX NIPPLE (MALE THREAD)	
	NASA APPROVAL <i>W. J. Sullivan</i> MIT APPROVAL <i>W. J. Sullivan</i>	SPECIFICATION CONTROL DRAWING	
		CODE IDENT NO. SIZE C	NASA DRAWING NO. 1016279
		SCALE NONE	WT SHEET 1 OF 1



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

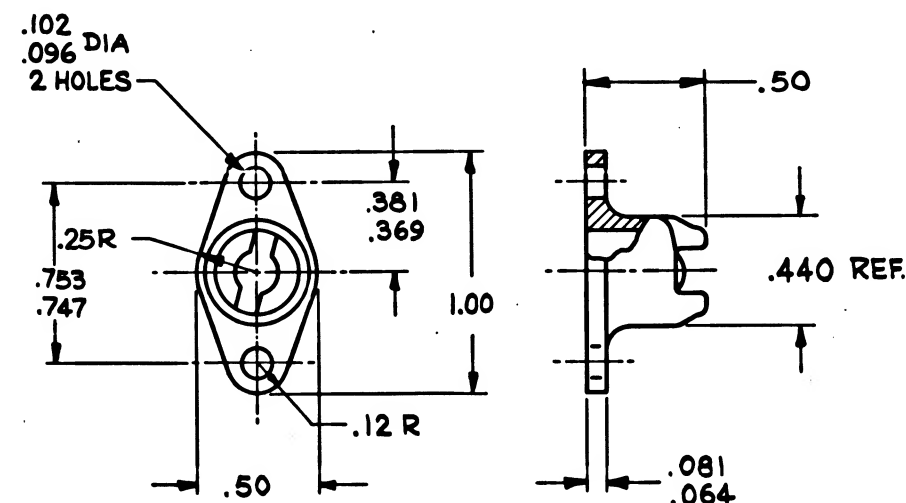
REQUIREMENTS:

1. GENERAL:
 - A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
 - B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
2. INSPECTION AND ACCEPTANCE:
 - A. MECHANICAL REQUIREMENTS:
 - (1) MATERIAL: (SEE TABLE)
 - a. SILICON BRONZE
 - b. STAINLESS STEEL, TYPE 302
 - (2) FINISH:
 - a. SILICON BRONZE: CADMIUM PLATE AND IRIDITE PER QQ-P-416, CLASS 2, TYPE II.
 - b. STAINLESS STEEL: RED ANILINE DYE.
 - (3) DIMENSIONS: AS SHOWN
 - (4) MARKING:
 - a. PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME.
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
DATE CODE, OR DATE OF MANUFACTURE.
 - b. MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.
3. APPLICATION DATA (FOR REFERENCE):
 - A. FOR USE WITH STUD FASTENER 1016081.

NASA DASH NUMBER	MATERIAL	MANUFACTURER'S PART NUMBER
-001	SILICON BRONZE	212-12
-002	STAINLESS STEEL	212-125

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

MASTER

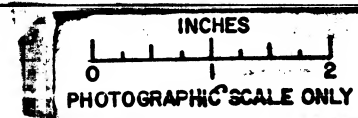


FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05682 DATE 1/7/64

THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>[Signature]</i> DATE 1/12/64 CHECKED <i>[Signature]</i> APPROVAL <i>[Signature]</i> 12 Dec 64 APPROVAL <i>[Signature]</i> 1/6/64		RECEPTACLE - CAMLOC FASTENER	
SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		NASA APPROVAL <i>[Signature]</i>	
FINAL FINISH SEE REQUIREMENTS		MIT APPROVAL <i>[Signature]</i>	
NEXT ASSY		USED ON	
APPLICATION		SCALE NONE WT	
		SHEET 1 OF 1	



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERE TO

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- MATERIAL: SUITABLE COPPER ALLOY - NON-MAGNETIC.
- FINISH: 50 MICRO INCH GOLD OVER SILVER PER MIL-G-45204, TYPE II, CLASS 2.
- DIMENSIONS: PER DRAWING AND MS3190 AND MS 3193.
- MARKING:
 - PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
 - SUPPLIER'S NAME.
 - NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
 - SUPPLIER'S LOT OR SERIAL NUMBER.
 - DATE CODE, OR DATE OF MANUFACTURE.
 - MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

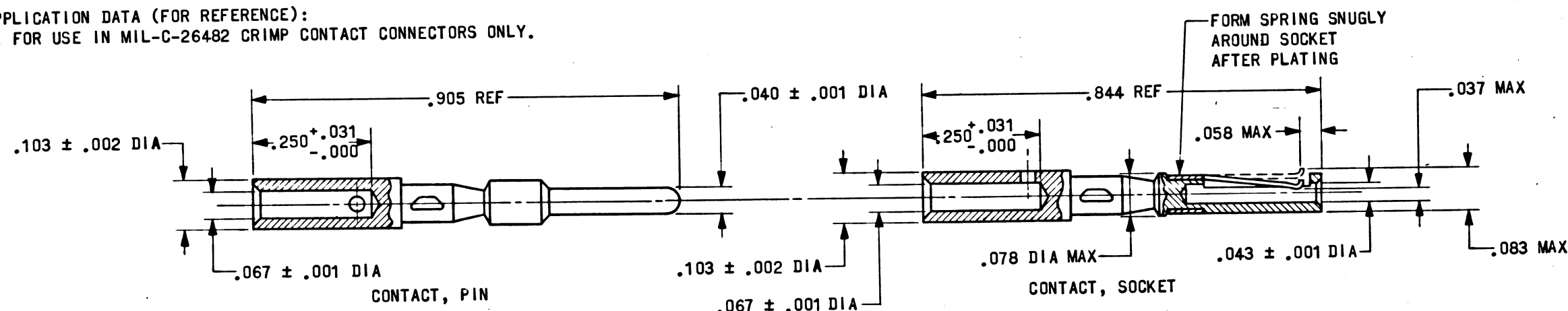
3. APPLICATION DATA (FOR REFERENCE):

- FOR USE IN MIL-C-26482 CRIMP CONTACT CONNECTORS ONLY.

NASA DASH NUMBER	TYPE	MANUFACTURER'S PART NUMBER
-180	PIN	10-330930-202
-181	SOCKET	10-330931-202

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05682 DATE 1/7/64



THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

REPLACED WITH CHANGE BY REV B

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DWG NO. <i>Bender</i> DATE <i>12 DEC 63</i>		CONTACT-PIN & SOCKET SPECIAL	
CHECKED <i>W. Duell</i> 16 DEC 63		SPECIFICATION CONTROL DRAWING	
APPROVAL <i>J. Lewis</i> 16 DEC 63		CODE IDENT NO. SIZE	
APPROVAL <i>L. Godeman</i> 1/6/64		NASA DRAWING NO. 1016281	
NASA APPROVAL <i>Bassman</i>		SCALE NONE WT	
MIT APPROVAL <i>W. G. 1/7/64</i>		SHEET 1 OF 1	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.

B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL: SUITABLE COPPER ALLOY - NON-MAGNETIC. (SPECIFIC TYPE OF ALLOY TO BE SUPPLIED BY VENDOR).

(2) FINISH: 50 MICRO INCH GOLD OVER SILVER PER MIL-G-45204, TYPE I, CLASS 2.

(3) DIMENSIONS: PER DRAWINGS MS3190 AND MS3193.

(4) MARKING:

a. PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:

SUPPLIER'S NAME.

NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.

SUPPLIER'S LOT OR SERIAL NUMBER.

DATE CODE, OR DATE OF MANUFACTURE.

b. MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

3. APPLICATION DATA (FOR REFERENCE):

A. FOR USE IN MIL-C-26482 CRIMP CONTACT CONNECTORS ONLY.

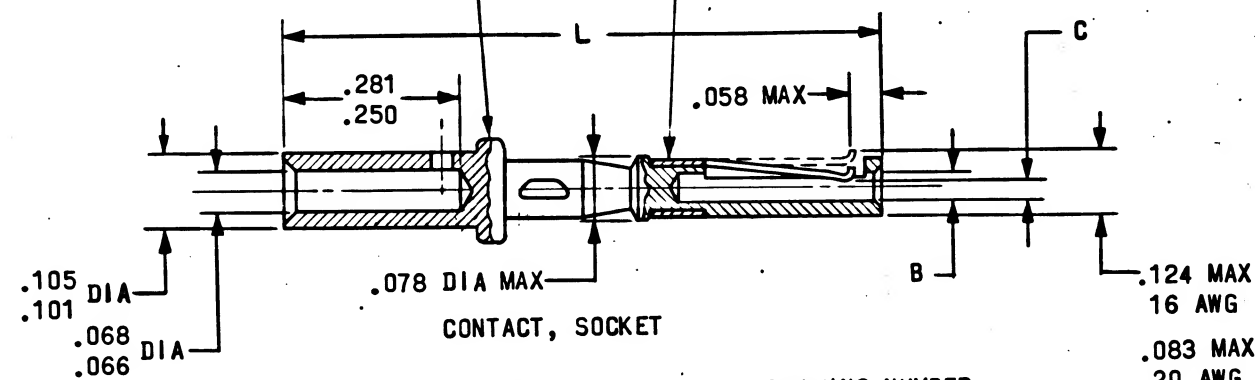
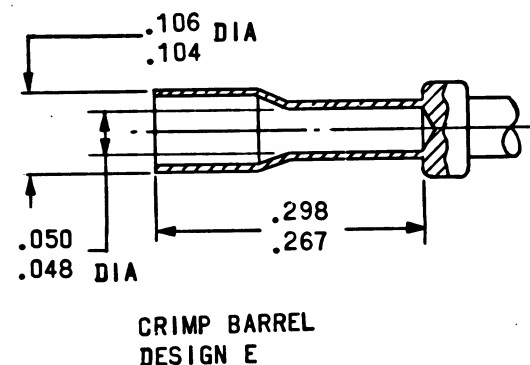
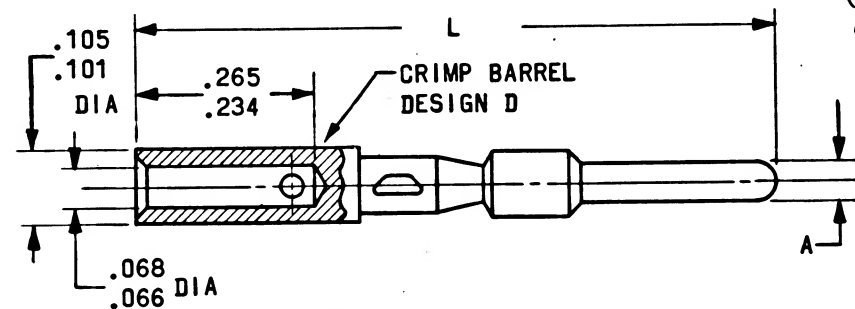
B. STRIP LENGTH 0.250 INCH FOR ALL CONTACTS.

C. INSULATION SHALL EXTEND INTO INSULATION CUP OF CONTACTS DASH -200 AND -201.

D. CONTACTS DESIGNED TO BE CRIMPED USING CRIMP TOOL MS 3191A WITH POSITIONERS MS 3191-16A OR MS 3191-20A. CRIMP TOOL INSPECTION GAGE SHALL BE PER MS 3196-16A OR MS 3196-20A.

NASA DASH NUMBER	TYPE	MANUFACTURER'S PART NUMBER	DIA A ±.001	DIA B ±.001	DIA C MAX	L REF	CRIMP BARREL DESIGN
-180	PIN	10-330930-202	.040			.905	D
-181	SOCKET	10-330931-202		.043	.037	.844	D
-160	PIN	10-314980-16P	.0625			.905	H
-201	SOCKET	10-314980-20S		.043	.037	.854	E
-200	PIN	10-314980-20P	.040			.916	E
-161	SOCKET	10-314980-16S		.064	.059	.844	H

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.



FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05682 DATE 7 JAN 64

THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

REPLACES REV A WITH CHANGE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Bender</i> 12 DEC 63 CHECKED <i>W. DIEHL</i> 16 DEC 63 APPROVAL <i>J. LEWIS</i> 16 DEC 63 APPROVAL <i>Ed. dt</i> 9/14/64		CONTACT-PIN & SOCKET SPECIAL	
NASA APPROVAL <i>A.C.M.</i> 9/15/64 MIT APPROVAL <i>W. H. dt</i> 9/15/64		SPECIFICATION CONTROL DRAWING	
CODE IDENT NO. C		NASA DRAWING NO. 1016281	
SCALE NONE		SHEET 1 OF 1	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ±	
DO NOT SCALE THIS DRAWING	
MATERIAL	
SEE REQUIREMENTS	
HEAT TREATMENT NONE	
FINAL FINISH NONE	
NEXT ASSY	USED ON
APPLICATION	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE IN ANY MANNER FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERE TO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- MATERIAL: SUITABLE COPPER ALLOY - NON-MAGNETIC. (SPECIFIC TYPE OF ALLOY TO BE SUPPLIED BY VENDOR).
- FINISH: 50 MICRO INCH GOLD OVER SILVER PER MIL-G-45204, TYPE 1, CLASS 2.
- DIMENSIONS: PER DRAWINGS MS3190 AND MS3193.
- MARKING:

- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME.
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.

DATE CODE, OR DATE OF MANUFACTURE.

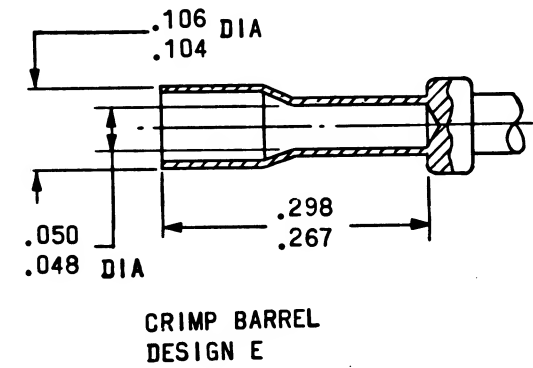
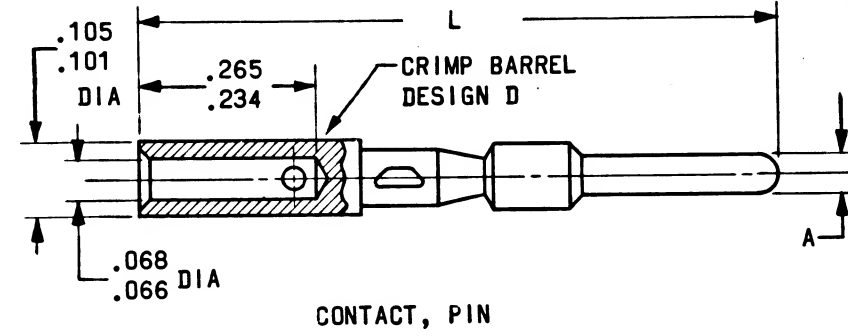
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

3. APPLICATION DATA (FOR REFERENCE):

- FOR USE IN MIL-C-26482 CRIMP CONTACT CONNECTORS ONLY.
- STRIP LENGTH 0.250 INCH FOR ALL CONTACTS.
- INSULATION SHALL EXTEND INTO INSULATION CUP OF CONTACTS DASH -200 AND -201.
- CONTACTS DESIGNED TO BE CRIMPED USING CRIMP TOOL MS 3191A WITH POSITIONERS MS 3191-16A OR MS 3191-20A. CRIMP TOOL INSPECTION GAGE SHALL BE PER MS 3196-16A OR MS 3196-20A.

NASA DASH NUMBER	TYPE	MANUFACTURER'S PART NUMBER	DIA A ±.001	DIA B ±.001	DIA C MAX	L REF	CRIMP BARREL DESIGN
-180	PIN	10-330930-202	.040			.905	D
-181	SOCKET	10-330931-202		.043	.037	.844	D
-160	PIN	10-314980-16P	.0625			.905	H
-201	SOCKET	10-314980-20S		.043	.037	.854	E
-200	PIN	10-314980-20P	.040			.916	E
-161	SOCKET	10-314980-16S		.064	.059	.844	H

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

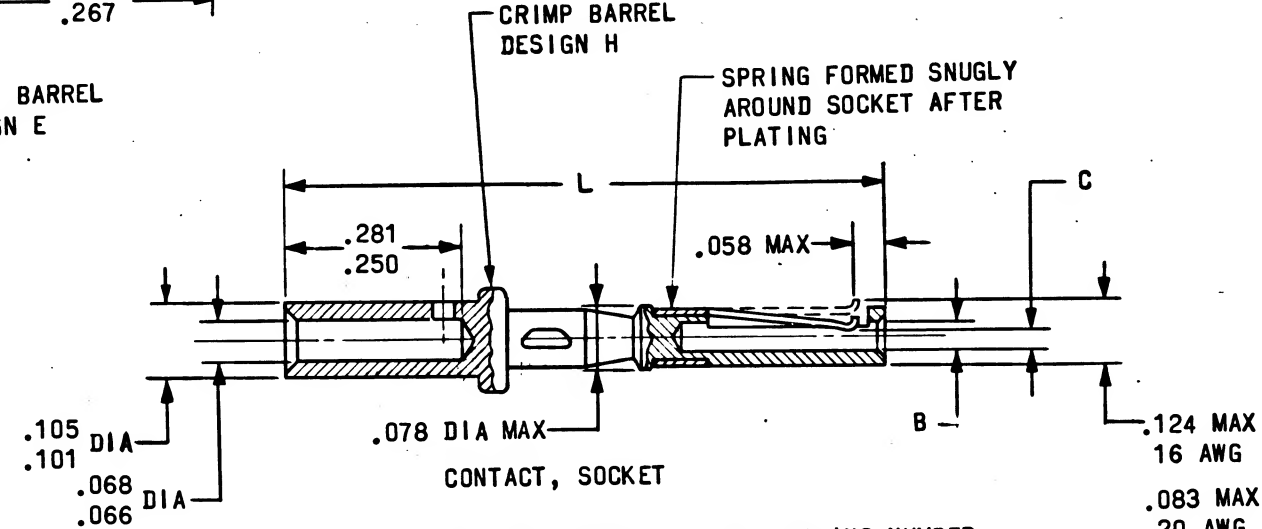


.105 DIA
.101
.068 DIA
.066 DIA

.106 DIA
.104
.050 DIA
.048 DIA

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05682 DATE 7 JAN 69



(B) REPLACES REV A WITH CHANGE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN Bender DATE 12 DEC 63 CHECKED W. DIEHL 16 DEC 63 APPROVAL J. LEWIS 16 DEC 63 APPROVAL J. Sch dt 9/14/64		CONTACT-PIN & SOCKET SPECIAL	
NASA APPROVAL A. C. H. 9/14/64 MIT APPROVAL J. Sch dt 9/14/64		SPECIFICATION CONTROL DRAWING CODE IDENT NO. SIZE C 1016281	
SCALE NONE		SHEET 1 OF 1	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

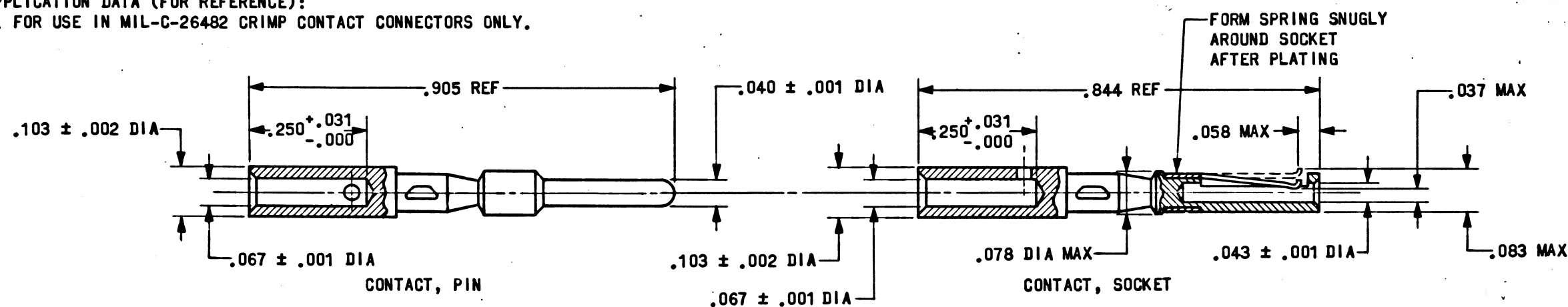
REQUIREMENTS:

1. GENERAL:
 - A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
 - B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
 2. INSPECTION AND ACCEPTANCE:
 - A. MECHANICAL REQUIREMENTS:
 - (1) MATERIAL: SUITABLE COPPER ALLOY - NON-MAGNETIC.
 - (2) FINISH: 50 MICRO INCH GOLD OVER SILVER PER MIL-G-45204, TYPE II, CLASS 2.
 - (3) DIMENSIONS: PER DRAWING AND MS3190 AND MS 3193.
 - (4) MARKING:
 - a. PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
 - SUPPLIER'S NAME.
 - NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
 - SUPPLIER'S LOT OR SERIAL NUMBER.
 - DATE CODE, OR DATE OF MANUFACTURE.
 - b. MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.
3. APPLICATION DATA (FOR REFERENCE):
 - A. FOR USE IN MIL-C-26482 CRIMP CONTACT CONNECTORS ONLY.

NASA DASH NUMBER	TYPE	MANUFACTURER'S PART NUMBER
-180	PIN	10-330930-202
-181	SOCKET	10-330931-202

FOR INFORMATION ONLY

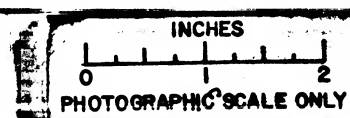
CLASS B RELEASE TDR No. 05682 DATE 1/7/64



THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

QTY REQD		PART OR IDENTIFYING NO.		NOMENCLATURE OR DESCRIPTION		FIND NO.	
LIST OF MATERIALS							
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497				MANNED SPACECRAFT CENTER HOUSTON, TEXAS			
DRAWN <u>Bender</u> 12 DEC 63 CHECKED <u>W. Smith</u> 16 DEC 63 APPROVAL <u>J. L. Ewing</u> 16 DEC 63 APPROVAL <u>L. Johnson</u> 16 DEC 63				CONTACT-PIN & SOCKET SPECIAL			
SEE REQUIREMENTS				SPECIFICATION CONTROL DRAWING			
HEAT TREATMENT NONE				NASA APPROVAL <u>Baxman</u> CODE IDENT NO. SIZE C			
FINAL FINISH NONE				NASA DRAWING NO. 1016281			
APPLICATION				SCALE NONE WT SHEET 1 OF 1			



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFERRING ANY RIGHTS, OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.

B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL: SYNTHETIC RUBBER - PER MIL-STD-417(ORD) GRADE SC75A₁, B₁, E₃.

(2) DIMENSIONS: PER THIS DRAWING

(3) MARKING:

a. PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:

SUPPLIER'S NAME

NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER

DATE CODE, OR DATE OF MANUFACTURE.

b. MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

3. APPLICATION DATA (FOR REFERENCE): FOR USE ON CONNECTOR TYPE MS 3126F.

NASA DASH NUMBER	A DIA FREE	B DIA	FOR SHELL SIZE	MANUFACTURER'S PART NUMBER	C	E	F DIA	G	H	J	K
-10	.188	.406	10	10-36565-122	.062	.344	.312	.125	.062	.312	.156
-12	.312	.532	12	-143	.062	.344	.438	.156	.078	.438	.219
-14	.375	.656	14	-183	.062	.344	.562	.156	.078	.562	.281
-16	.500	.719	16	-183	.062	.344	.625	.219	.109	.625	.312
-18	.625	.844	18 OR 20	-203	.094	.344	.750	.219	.109	.750	.375
-20											
-22	.750	1.032	22	10-36565-244	.094	.344	.938	.281	.141	.938	.469
-24	.800	1.094	24	-232	.094	.344	1.000	.281	.141	1.000	.500

SEE NOTE I

NOTE I, DO NOT USE DASH 20. FOR SHELL SIZE 20 USE DASH 18.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

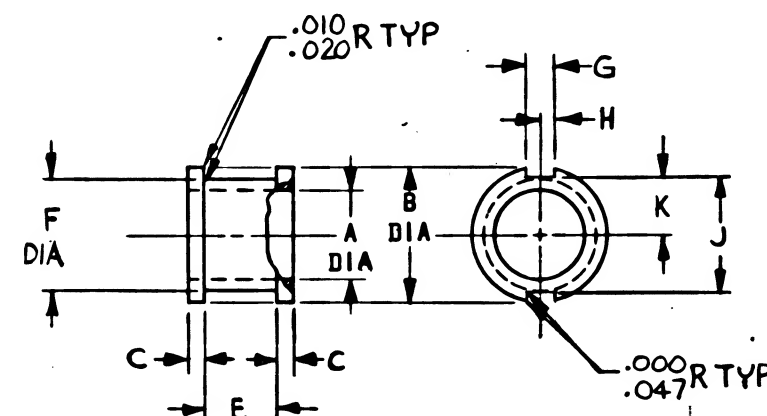
		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± ± .010 ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		NONE
NEXT ASSY	USED ON	
APPLICATION		

1016282

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	CHANGE IN ACCORDANCE WITH PER TORR 7715 CM 195347	20 FEB 64	R.W.T. EF
B	CHANGE IN ACCORDANCE WITH PER TORR 7716 CM 196039	24 MAR 64	EF

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05682 DATE 1/7/64



QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
		LIST OF MATERIALS	
	MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
	DRAWN <i>Bender</i> 11-DEC-63 CHECKED <i>A. W. Smith</i> 12 DEC 63 APPROVAL <i>J. L. W. S.</i> 12 DEC 63	GROMMET, CONNECTOR STRAIN RELIEF	
	NASA APPROVAL <i>[Signature]</i>	SPECIFICATION CONTROL DRAWING	
	MIT APPROVAL <i>[Signature]</i>	CODE IDENT NO. C SIZE 1016282	
		SCALE NONE WT SHEET 1 OF 1	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCUR NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSED THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEY, OR ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY INVENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

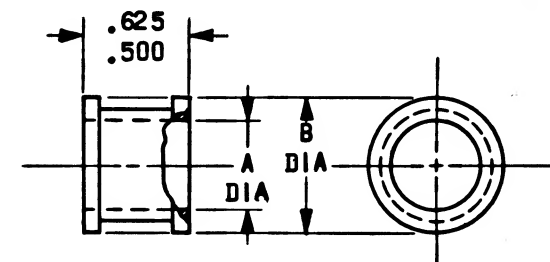
REQUIREMENTS:

1. GENERAL:
 - A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
 - B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
2. INSPECTION AND ACCEPTANCE:
 - A. MECHANICAL REQUIREMENTS:
 - (1) MATERIAL: SYNTHETIC RUBBER - PER MIL-R-6855
 - (2) DIMENSIONS: PER THIS DRAWING
 - (3) MARKING:
 - a. PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER, AND
REVISION LETTER
DATE CODE, OR DATE OF MANUFACTURE.
 - b. MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.
3. APPLICATION DATA (FOR REFERENCE): FOR USE ON CONNECTOR TYPE MS 3126F.

NASA DASH NUMBER	A DIA FREE	B DIA	FOR SHELL SIZE	MANUFACTURER'S PART NUMBER
- 8	.125	.375	8	TO BE ASSIGNED
-10	.188	.438	10	
-12	.312	.562	12	
-14	.375	.625	14	
-16	.500	.750	16	
-18	.625	.875	18	
-20	.625	.875	20	
-22	.750	1.000	22	
-24	.800	1.050	24	

FOR INFORMATION ONLY

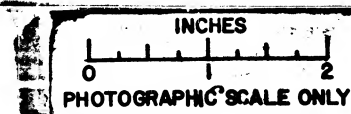
CLASS B RELEASE TDR No. 05682 DATE 1/7/64



THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

QTY REQD		PART OR IDENTIFYING NO.		NOMENCLATURE OR DESCRIPTION		FIND NO.	
LIST OF MATERIALS							
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497				MANNED SPACECRAFT CENTER HOUSTON, TEXAS			
DRAWN <u>Bender</u> 11-DEC-63 CHECKED <u>W. H. H. H.</u> 12 DEC 63 APPROVAL <u>L. Goldman</u> 1/6/64				GROMMET, CONNECTOR STRAIN RELIEF			
SEE REQUIREMENTS				SPECIFICATION CONTROL DRAWING			
HEAT TREATMENT NONE				NASA APPROVAL <u>[Signature]</u>			
FINAL FINISH NONE				MIT APPROVAL <u>[Signature]</u>			
APPLICATION				NASA DRAWING NO. 1016282			
				SCALE NONE WT SHEET 1 OF 1			



NOTICE - UNDER GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORWARDED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE DEEMED BY IMPLICATION OR OTHERWISE AS A WARRANTY, LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR FORVEY, OR ANY RIGHTS OR PERMISSION TO REPRODUCE, USE, OR SELL ANY REPRODUCED INFORMATION THAT MAY IN ANY WAY BE RELATED THEREBY.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
- MAGNETIC CONTROLS PART NUMBER CS11A-1.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- LEADS: SHALL BE SOLDERABLE.
- FINISH: BLACK PER STANDARD FED-STD-595 NO. 27038.
- DIMENSIONS: PER THIS DRAWING.

(4) MARKING:

- PIECEMARKING: MARK PERMANENTLY AND LEGIBLY WITH THE NASA DRAWING NUMBER AND REVISION LETTER, MFG'S NAME AND/OR SYMBOL, MFG'S SERIAL NUMBER, TERMINAL IDENTIFICATION, AND POLARITY SYMBOLS OF OUTPUT TERMINALS.
- PACKAGE: THE MANUFACTURER PART NUMBER MAY APPEAR ON THE PART AND PACKAGE.

B. ELECTRICAL REQUIREMENTS:

- GAIN: ADJUST POTENTIOMETER R1 FOR THE INPUT CURRENTS SPECIFIED IN TABLE I. THE CORRESPONDING OUTPUT VOLTAGES SHALL BE AS SPECIFIED IN THAT TABLE. THIS TEST SHALL BE PERFORMED THREE TIMES, ONCE IN EACH OF THE FOLLOWING AMBIENT TEMPERATURES, IN THE SEQUENCE INDICATED, AFTER THE UNIT ATTAINS THERMAL STABILITY IN THE AMBIENT TEMPERATURE:
 - $25 \pm 10^{\circ}\text{C}$
 - $150^{\circ} \pm 5^{\circ}\text{F}$
 - $25 \pm 10^{\circ}\text{C}$
- MAXIMUM OUTPUT: ADJUST R1 FOR AN INDICATION OF 1.5 AMPERES ON M1. THE VOLTAGE INDICATED ON M2 SHALL NOT EXCEED 6.0 VDC.
- OUTPUT IMPEDANCE: ADJUST R1 FOR AN INDICATION OF 1.0 AMPERE ON M1 AND NOTE THE OUTPUT VOLTAGE (M2). CLOSE SWITCH S1. THE OUTPUT VOLTAGE SHALL NOT DECREASE BY MORE THAN 50 PER CENT AFTER S1 IS CLOSED.
- OUTPUT RIPPLE: CONNECT A CALIBRATED OSCILLOSCOPE IN PARALLEL WITH M2. ADJUST R1 FOR THE INPUT CURRENTS SPECIFIED IN TABLE I AND FOR AN INPUT CURRENT OF 1.5 AMPERES. THE PEAK-TO-PEAK RIPPLE SHALL NOT EXCEED 50 MV FOR ANY OF THESE INPUT CURRENTS.
- DIELECTRIC STRENGTH: 500 V (RMS)
- INSULATION RESISTANCE: 100 MEGOHMS MINIMUM AT 25°C .

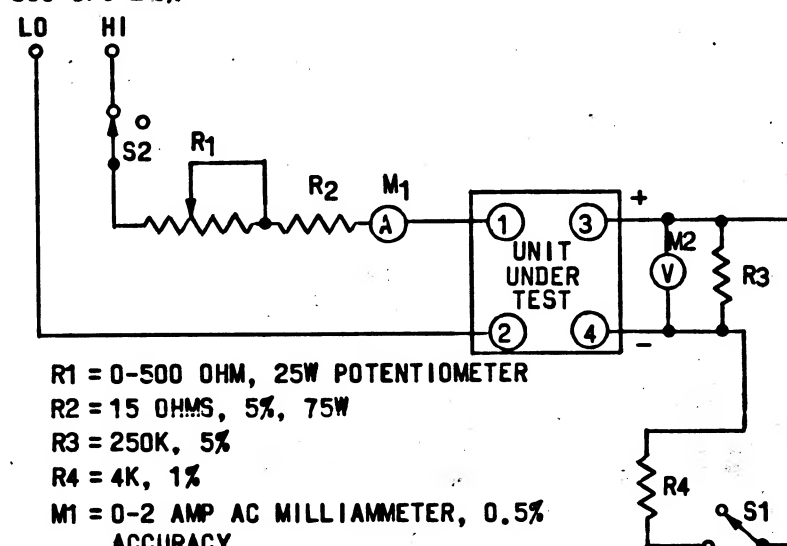
TABLE I GAIN

INPUT CURRENT-AMPERES (AS INDICATED ON METER M1)	OUTPUT VOLTAGE - VDC (AS INDICATED ON METER M2)
0.0 (S2 OPEN)	0.0 ± 0.0
0.1	0.5 ± 0.2
0.2	1.0 ± 0.2
0.4	2.0 ± 0.2
0.6	3.0 ± 0.2
0.8	4.0 ± 0.2
1.0	5.0 ± 0.2

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

28V $\pm 5\%$
800 CPS $\pm 5\%$

TEST CIRCUIT I



R1 = 0-500 OHM, 25W POTENTIOMETER

R2 = 15 OHMS, 5%, 75W

R3 = 250K, 5%

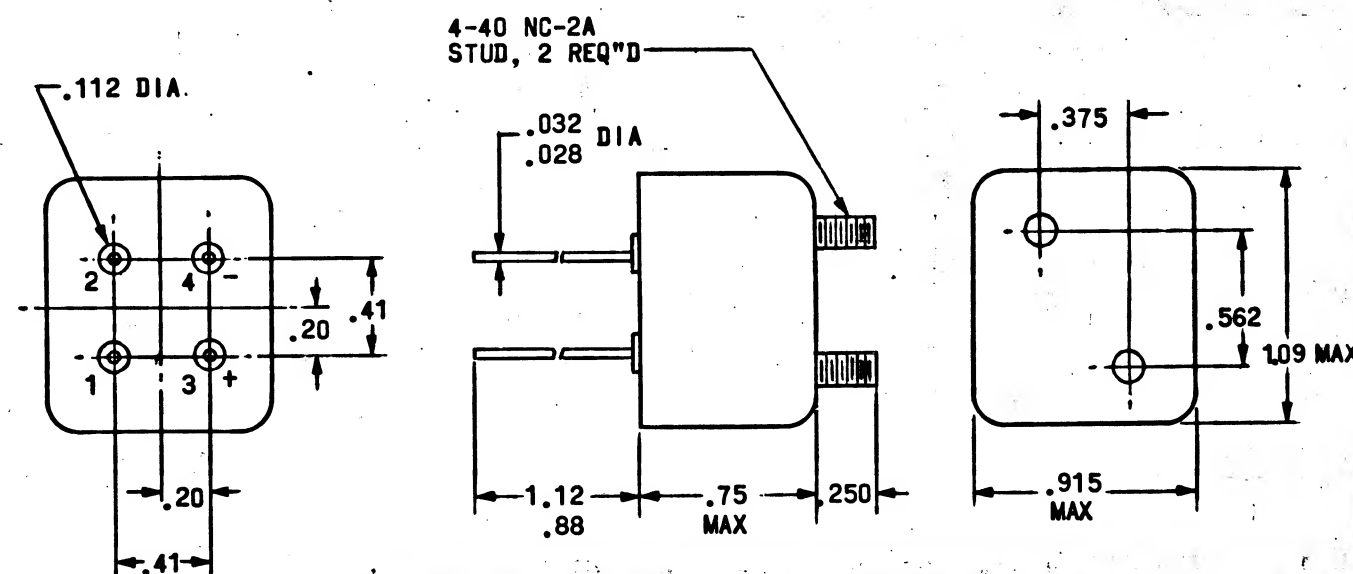
R4 = 4K, 1%

M1 = 0-2 AMP AC MILLIAMMETER, 0.5% ACCURACY

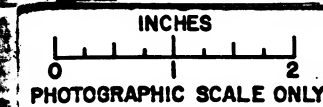
M2 = 0-10V DC VOLTMETER, 0.1% ACCURACY

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 06831 DATE 10/20/64



QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
		LIST OF MATERIALS	
		MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Contract NAS 9-497	
		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
		CURRENT SENSOR	
		SPECIFICATION CONTROL DRAWING	
		NASA APPROVAL <u>G. C. M. J. J.</u>	CODE IDENT NO. SIZE
		MIT APPROVAL <u>W. J. J. J.</u>	C 1016283
		SCALE NONE	WT
			SHEET 1 OF 1



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT ASSUMES NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER. NEITHER THE UNITED STATES GOVERNMENT NOR ANY EMPLOYEE THEREOF SHALL BE HELD LIABLE FOR ANY INJURY OR DAMAGE TO PERSON OR PROPERTY, OR FOR ANY LOSS OF PROFITS, OR FOR ANY OTHER DAMAGES, OR FOR ANY OTHER CONSEQUENCES, ARISING OUT OF THE USE OF ANY SUCH DATA, OR FOR ANY OTHER REASON.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
- MAGNETIC CONTROLS PART NUMBER CS11A-1.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- LEADS: SHALL BE SOLDERABLE.
 - FINISH: BLACK PER STANDARD FED-STD-595 NO. 27038.
 - DIMENSIONS: PER THIS DRAWING.
- (4) MARKING:
- PIECEMARKING: MARK PERMANENTLY AND LEGIBLY WITH THE NASA DRAWING NUMBER AND REVISION LETTER, MFG'S NAME AND/OR SYMBOL, MFG'S SERIAL NUMBER, TERMINAL IDENTIFICATION, AND POLARITY SYMBOLS OF OUTPUT TERMINALS.
 - PACKAGE: THE MANUFACTURER PART NUMBER MAY APPEAR ON THE PART AND PACKAGE.

B. ELECTRICAL REQUIREMENTS:

- GAIN: ADJUST POTENTIOMETER R1 FOR THE INPUT CURRENTS SPECIFIED IN TABLE I. THE CORRESPONDING OUTPUT VOLTAGES SHALL BE AS SPECIFIED IN THAT TABLE. THIS TEST SHALL BE PERFORMED THREE TIMES, ONCE IN EACH OF THE FOLLOWING AMBIENT TEMPERATURES, IN THE SEQUENCE INDICATED, AFTER THE UNIT ATTAINS THERMAL STABILITY IN THE AMBIENT TEMPERATURE:
 - $25 \pm 10^\circ\text{C}$
 - $150^\circ \pm 5^\circ\text{F}$
 - $25 \pm 10^\circ\text{C}$
- MAXIMUM OUTPUT: ADJUST R1 FOR AN INDICATION OF 1.5 AMPERES ON M1. THE VOLTAGE INDICATED ON M2 SHALL NOT EXCEED 6.0 VDC.
- OUTPUT IMPEDANCE: ADJUST R1 FOR AN INDICATION OF 1.0 AMPERE ON M1 AND NOTE THE OUTPUT VOLTAGE (M2). CLOSE SWITCH S1. THE OUTPUT VOLTAGE SHALL NOT DECREASE BY MORE THAN 50 PER CENT AFTER S1 IS CLOSED.
- OUTPUT RIPPLE: CONNECT A CALIBRATED OSCILLOSCOPE IN PARALLEL WITH M2. ADJUST R1 FOR THE INPUT CURRENTS SPECIFIED IN TABLE I AND FOR AN INPUT CURRENT OF 1.5 AMPERES. THE PEAK-TO-PEAK RIPPLE SHALL NOT EXCEED 50 MV FOR ANY OF THESE INPUT CURRENTS.
- DIELECTRIC STRENGTH: 500 V (RMS)
- INSULATION RESISTANCE: 100 MEGOHMS MINIMUM AT 25°C .

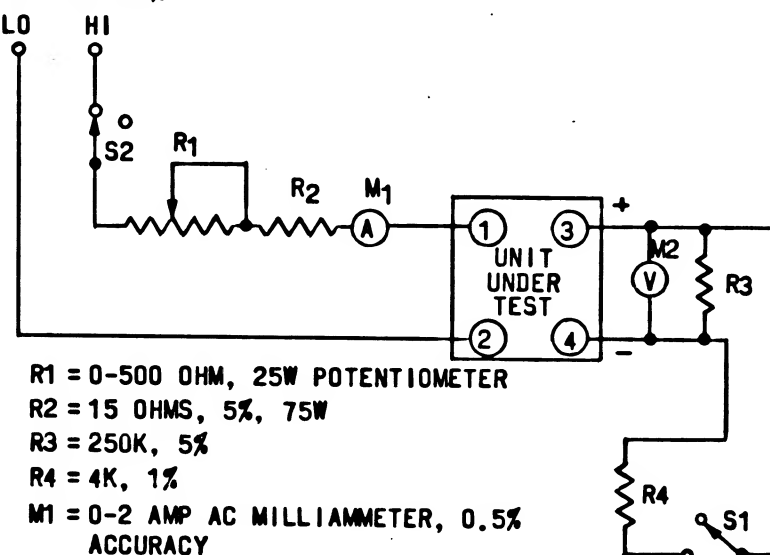
TABLE I GAIN

INPUT CURRENT-AMPERES (AS INDICATED ON METER M1)	OUTPUT VOLTAGE - VDC (AS INDICATED ON METER M2)
0.0 (S2 OPEN)	0.0 ± 0.0
0.1	0.5 ± 0.2
0.2	1.0 ± 0.2
0.4	2.0 ± 0.2
0.6	3.0 ± 0.2
0.8	4.0 ± 0.2
1.0	5.0 ± 0.2

PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING.

28V $\pm 5\%$
800 CPS $\pm 5\%$
LO HI

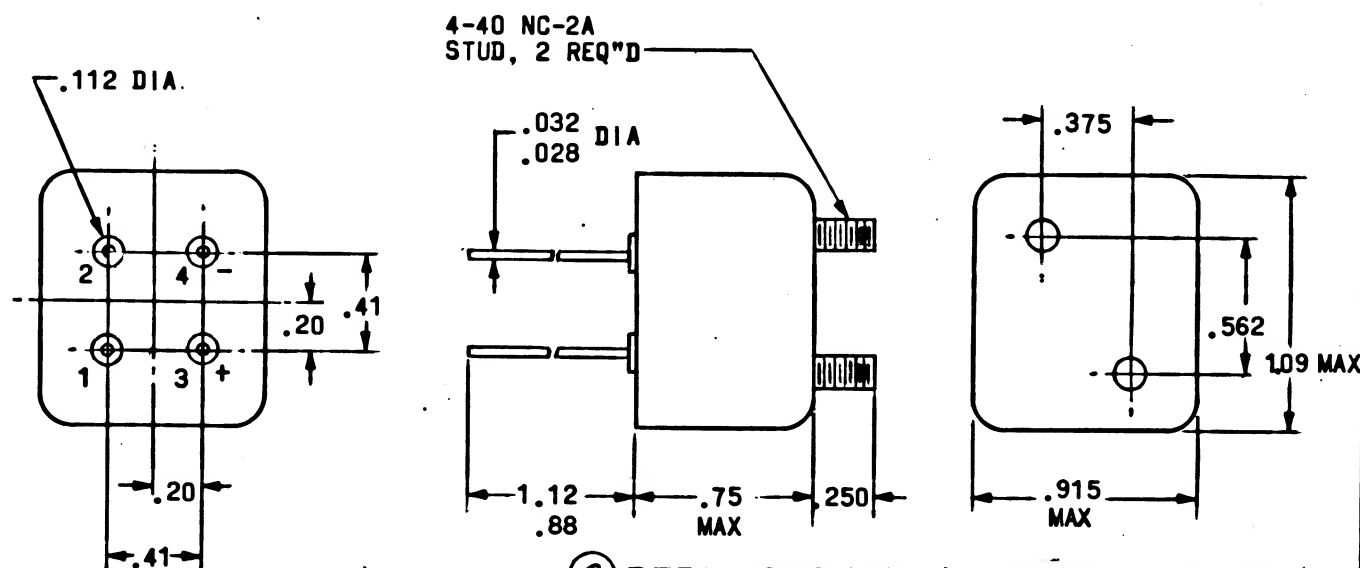
TEST CIRCUIT I



R1 = 0-500 OHM, 25W POTENTIOMETER
R2 = 15 OHMS, 5%, 75W
R3 = 250K, 5%
R4 = 4K, 1%
M1 = 0-2 AMP AC MILLIAMMETER, 0.5% ACCURACY
M2 = 0-10V DC VOLTMETER, 0.1% ACCURACY

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 06831 DATE 10/20/67



REPLACED WITH CHANGE BY REV D

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN J. J. J. DATE 17 DEC 63 CHECKED W. D. D. 20 DEC 63 APPROVAL J. J. J. 20 DEC 63 APPROVAL W. D. D. 20 DEC 63		CURRENT SENSOR	
NASA APPROVAL G. C. C. 10/20/64 MIT APPROVAL W. D. D. 10/20/64		SPECIFICATION CONTROL DRAWING	
CODE IDENT NO. C		NASA DRAWING NO. 1016283	
SCALE NONE		SHEET 1 OF 1	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
 $\pm .010$
 $\pm .02$
DO NOT SCALE THIS DRAWING
MATERIAL
SEE REQUIREMENTS
HEAT TREATMENT
NONE
FINAL FINISH
SEE REQUIREMENTS

NEXT ASSY USED ON APPLICATION

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

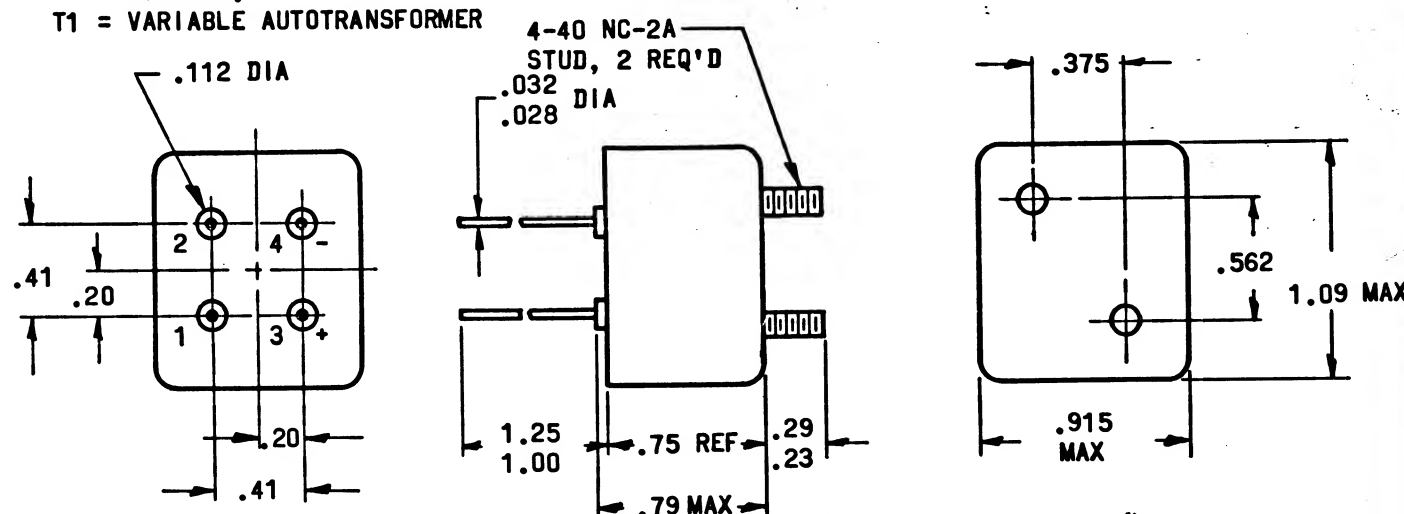
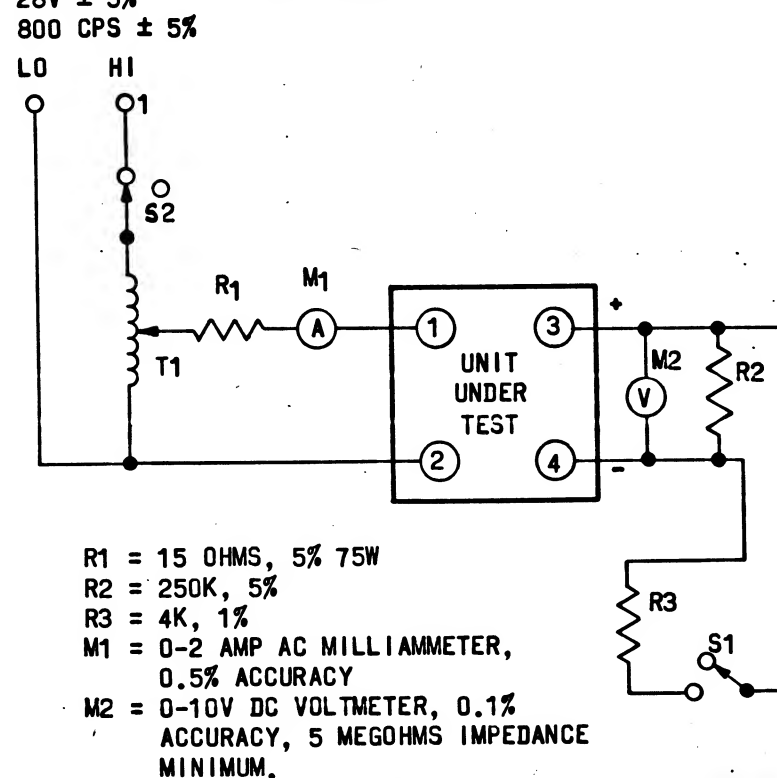
A. MECHANICAL REQUIREMENTS:

- LEADS: SHALL BE SOLDERABLE.
- FINISH: BLACK PER STANDARD FED-STD-595 NO. 27038.
- DIMENSIONS: PER THIS DRAWING.
- MARKING:
 - PIECEMARKING: MARK PERMANENTLY AND LEGIBLY WITH THE NASA DRAWING NUMBER AND REVISION LETTER, MANUFACTURER'S NAME AND/OR SYMBOL, MANUFACTURER'S SERIAL NUMBER, TERMINAL IDENTIFICATION, AND POLARITY SYMBOLS OF OUTPUT TERMINALS.
 - PACKAGE: THE MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART AND PACKAGE.

B. ELECTRICAL REQUIREMENTS:

- GAIN: ADJUST AUTOTRANSFORMER T1 FOR THE INPUT CURRENTS SPECIFIED IN TABLE I. THE CORRESPONDING OUTPUT VOLTAGES SHALL BE AS SPECIFIED IN THAT TABLE. THIS TEST SHALL BE PERFORMED THREE TIMES, ONCE IN EACH OF THE FOLLOWING AMBIENT TEMPERATURES, IN THE SEQUENCE INDICATED, AFTER THE UNIT ATTAINS THERMAL STABILITY IN THE AMBIENT TEMPERATURE:
 - $25 \pm 10^{\circ}\text{C}$
 - $150^{\circ} \pm 5^{\circ}\text{F}$
 - $25 \pm 10^{\circ}\text{C}$
- MAXIMUM OUTPUT: ADJUST T1 FOR AN INDICATION OF 1.5 AMPERES ON M1. THE VOLTAGE INDICATED ON M2 SHALL NOT EXCEED 6.0 VDC.
- OUTPUT IMPEDANCE: ADJUST T1 FOR AN INDICATION OF 1.0 AMPERE ON M1 AND NOTE THE OUTPUT VOLTAGE (M2). CLOSE SWITCH S1. THE OUTPUT VOLTAGE SHALL NOT DECREASE BY MORE THAN 50 PERCENT AFTER S1 IS CLOSED.
- OUTPUT RIPPLE: CONNECT A CALIBRATED OSCILLOSCOPE IN PARALLEL WITH M2. ADJUST T1 FOR THE INPUT CURRENTS SPECIFIED IN TABLE I AND FOR AN INPUT CURRENT OF 1.5 AMPERES. THE PEAK-TO-PEAK RIPPLE SHALL NOT EXCEED 50 MV FOR ANY OF THESE INPUT CURRENTS.

TEST CIRCUIT 1



D	D
SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	

REPLACES REV C WITH CHANGE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS.		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>JAWOWIAK</i> DATE <i>17 DEC 63</i>		CURRENT SENSOR	
CHECKED <i>W. DICK</i> DATE <i>20 DEC 63</i>		SPECIFICATION CONTROL DRAWING	
APPROVAL <i>N. Blumhagen</i> DATE <i>20 DEC 63</i>		CODE IDENT NO. SIZE	
APPROVAL <i>1. B. H. H. H.</i> DATE <i>12 JAN 65</i>		C 1016283	
NASA APPROVAL <i>G. C. H. H. H.</i> DATE <i>21 JAN 65</i>		SCALE NONE WT	
MIT APPROVAL <i>W. J. H. H. H.</i> DATE <i>16 FEB 65</i>		SHEET 1 OF 2	

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

MASTER

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERE TO.

REQUIREMENTS: (CONTINUED)

- (5) DIELECTRIC STRENGTH: 500V (RMS) BETWEEN TERMINAL 1 AND CASE AND BETWEEN TERMINAL 3 AND CASE. 250 VOLTS (RMS) BETWEEN TERMINALS 1 AND 3.
- (6) INSULATION RESISTANCE (AT $25 \pm 10^\circ\text{C}$): 100 MEGOHMS MINIMUM BETWEEN TERMINAL 1 AND CASE AND BETWEEN TERMINAL 3 AND CASE. 100 MEGOHMS MINIMUM BETWEEN TERMINALS 1 AND 3. USE 250 VOLTS DC FOR MEASUREMENT.

TABLE I GAIN

INPUT CURRENT-AMPERES (AS INDICATED ON METER M1)	OUTPUT VOLTAGE - VDC (AS INDICATED ON METER M2)
0.0 (S2 OPEN)	0.0 ± 0.0
0.1	0.5 ± 0.2
0.2	1.0 ± 0.2
0.4	2.0 ± 0.2
0.6	3.0 ± 0.2
0.8	4.0 ± 0.2
1.0	5.0 ± 0.2

Ⓓ THIS SHEET ADDED

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. CONTRACT 1939-227		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN BY <i>F. Kromm</i> DATE <i>29 APR 64</i> CHECKED BY <i>Ed. Foster</i> 29 APR 64 APPROVAL BY <i>W. R. ...</i> 29 APR 64 APPROVAL BY <i>...</i> 12 JAN 65		CURRENT SENSOR	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ± DO NOT SCALE THIS DRAWING MATERIAL		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT		CODE IDENT NO.	SIZE
NEXT ASSY USED ON		NASA DRAWING NO.	
APPLICATION		1016283	
FINAL FINISH		SCALE	WT
MIT APPROVAL <i>...</i>		SHEET 2 OF 2	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

- BODY: STAINLESS STEEL, TYPE 303.
- SEAT: KEL-F.
- PACKING: VIRGIN TEFLON.

(2) FINISH: PASSIVATE PER MIL-F-14072, E 300.

(3) DIMENSIONS: AS SHOWN.

(4) MARKING:

- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION PER MIL-STD-129:
SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER
DATE CODE, OR DATE OF MANUFACTURE
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

3. DESIGN INFORMATION:

A. WORKING PRESSURE: FROM VACUUM TO 5000 PSI

B. OPERATING TEMPERATURE: -20°F TO +300°F

C. VALVE FURNISHED COMPLETE WITH NUTS AND FERRULES.

NASA DASH NUMBER	PART DESCRIPTION	END FITTING OR THREAD SIZE	ORIFICE DIA (MIN)	A	B	C	D	E	F	MANUFACTURER'S PART NUMBER	
										VALVE	PANEL MOUNTING NUTS
-001	VALVE WITH PANEL MOUNTING NUT	3/8 FLARELESS TUBE	.250	1.49	2.43	1.72	1.00	.80	1.98	30203-1	S492-8
-101	VALVE									30203-1	
-201	PANEL MOUNTING NUT	3/4-27									S492-8

NOTES:

- DIMENSION B IS MEASURED WITHOUT NUTS AND FERRULES ATTACHED.

PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING

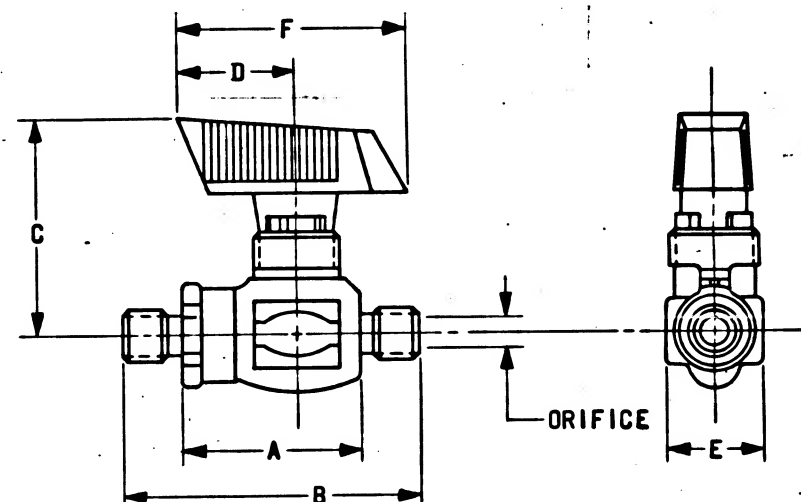
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES \pm \pm .02 \pm	
DO NOT SCALE THIS DRAWING	
MATERIAL	
SEE REQUIREMENTS	
HEAT TREATMENT	
NONE	
FINAL FINISH	
SEE REQUIREMENTS	
NEXT ASSY	USED ON
APPLICATION	

1016286

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 10931	23 JUL 64	JWP

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05682 DATE 1/7/64



THE PART NUMBER IS THE DRAWING NUMBER
PLUS THE APPLICABLE DASH NUMBER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Bender</i> 19-DEC-63 CHECKED <i>W. Diell</i> 20 DEC 63 APPROVAL <i>R. Thompson</i> 20 DEC 63 APPROVAL <i>J. Godeman</i> 1/6/64		VALVE - BALL, MINIATURE QUARTER TURN ON-OFF OPERATION	
NASA APPROVAL <i>[Signature]</i> MIT APPROVAL <i>[Signature]</i>		CODE IDENT NO. SIZE C	NASA DRAWING NO. 1016286
SCALE NONE		WT	SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREOF.

REQUIREMENTS:

1. GENERAL:
 - A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
 - B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN MIL-Q-9858.
2. INSPECTION AND ACCEPTANCE:
 - A. MECHANICAL REQUIREMENTS:
 - (1) MATERIAL:
 - a. BODY: STAINLESS STEEL, TYPE 303.
 - b. SEAT: KEL-F.
 - c. PACKING: VIRGIN TEFLON.
 - (3) DIMENSIONS: AS SHOWN.
 - (4) MARKING:
 - a. PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION PER MIL-STD-129:
SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER, AND
REVISION LETTER
DATE CODE, OR DATE OF MANUFACTURE
 - b. MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.
3. DESIGN INFORMATION:
 - A. MAXIMUM OPERATING PRESSURE 5000 PSI.
 - B. OPERATING TEMPERATURE: 0°F TO +300°F
 - C. VALVE FURNISHED COMPLETE WITH NUTS AND FERRULES.

NASA DASH NUMBER	PART DESCRIPTION	END FITTING OR THREAD SIZE	ORIFICE DIA (MIN)	A	B	C	D	E	F	MANUFACTURER'S PART NUMBER	
										VALVE	PANEL MOUNTING NUTS
-001	VALVE WITH PANEL MOUNTING NUT	3/8 FLARELESS TUBE	.250	1.49	2.43	1.72	1.00	.80	1.98	30203-1	S492-8
-101	VALVE									30203-1	
-201	PANEL MOUNTING NUT	3/4-27									S492-8

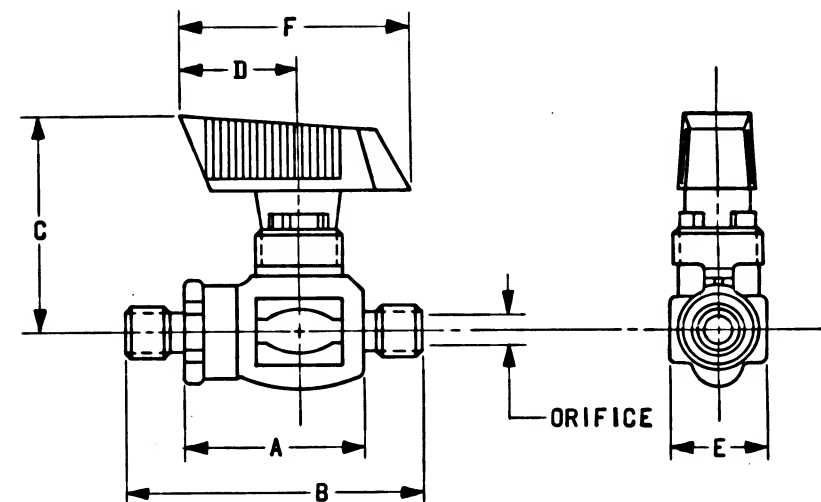
NOTES:

- I. DIMENSION B IS MEASURED WITHOUT NUTS AND FERRULES ATTACHED.

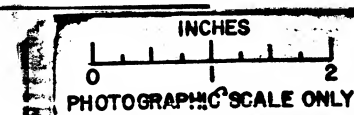
PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± — ± .02 ± —
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		SEE REQUIREMENTS
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Bender</i> 19-DEC-63 DATE CHECKED <i>W. Biell</i> 20 DEC 63 APPROVAL <i>R. Kampman</i> 20 DEC 63 APPROVAL <i>E. Gledeman</i> 16/64		VALVE - BALL, MINIATURE QUARTER TURN ON-OFF OPERATION	
NASA APPROVAL <i>[Signature]</i> MIT APPROVAL <i>W. Kaffer</i> 2/2/64		SPECIFICATION CONTROL DRAWING	
CODE IDENT NO.		SIZE C	NASA DRAWING NO. 1016286
SCALE NONE		WT	SHEET 1 OF 1



THE PART NUMBER IS THE DRAWING NUMBER
PLUS THE APPLICABLE DASH NUMBER



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MARKING:

- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:

SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER, AND
REVISION LETTER
DATE CODE, OR DATE OF MANUFACTURE

- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

NASA DASH NUMBER	MANUFACTURER'S PART NUMBER	RANGE (MICRONS HG.)	DESCRIPTION
-001	VT-6-DV-6M	0-1000	GAUGE AND TUBE
-002	DV 6M	-	GAUGE TUBE

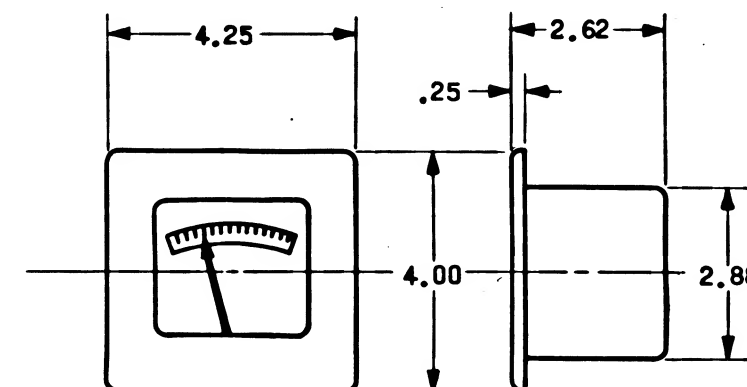
PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

1016288

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 13805	27 OCT 64	JJJ

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05899 DATE 1/20/64



THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS CONTRACT NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <u>Bender</u> 20 DEC 63 CHECKED <u>W. H. G. 31 DEC 63</u> APPROVAL <u>L. J. WEAR 31 DEC 63</u> APPROVAL <u>L. J. WEAR 1/13/64</u>		GAGE - VACUUM	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± — ± .02 ± — DO NOT SCALE THIS DRAWING MATERIAL NONE HEAT TREATMENT NONE FINAL FINISH NONE		SPECIFICATION CONTROL DRAWING	
NEXT ASSY	USED ON	NASA DRAWING NO. 1016288	
APPLICATION		SCALE NONE WT	SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN MIL-Q-9858.

2. INSPECTION AND ACCEPTANCE:

A. MARKING:

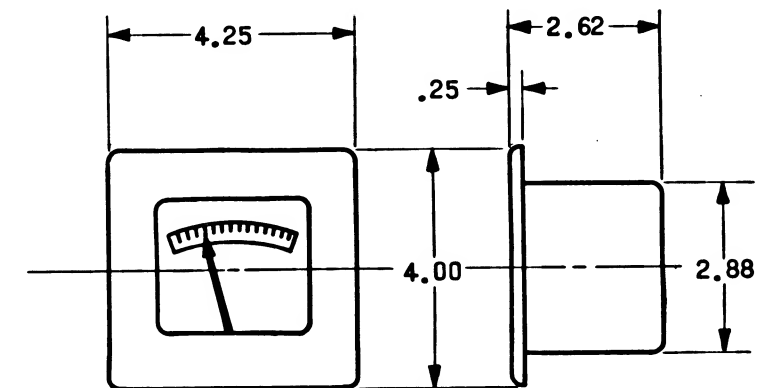
- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER
DATE CODE, OR DATE OF MANUFACTURE
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

NASA DASH NUMBER	MANUFACTURER'S PART NUMBER	RANGE (MICRONS HG.)	DESCRIPTION
-001	VT-6-DV-6M	0-1000	GAUGE AND TUBE
-002	DV 6M	-	GAUGE TUBE

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

1016288

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED PER TDRR 13805	27 OCT 64	JJJ
B	REVISED & UPGRADED TO CLASS A PER TDRR 17203	15 MAR 65	B. EF



THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Bender</i> 20 DEC 63 CHECKED <i>W. Kye</i> 31 DEC 63 APPROVAL <i>W. Kye</i> 31 DEC 63 APPROVAL <i>Edman</i> 1/13/64		GAGE - VACUUM	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± — ± .02 ± — DO NOT SCALE THIS DRAWING MATERIAL NONE HEAT TREATMENT NONE FINAL FINISH NONE APPLICATION		SPECIFICATION CONTROL DRAWING CODE IDENT NO. SIZE C 1016288 SCALE NONE WT SHEET 1 OF 1	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MARKING:

- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:

SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER, AND
REVISION LETTER
DATE CODE, OR DATE OF MANUFACTURE

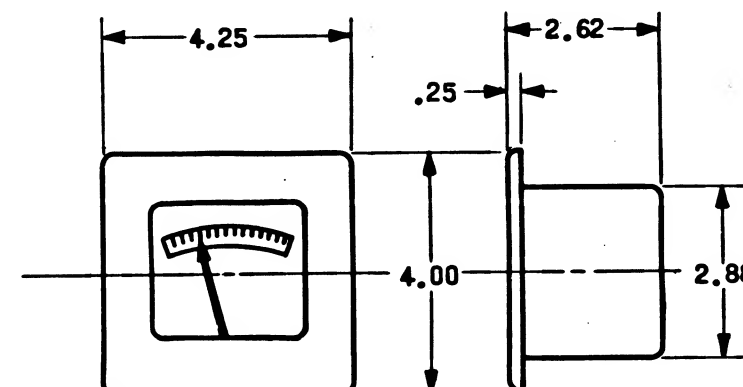
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

1016288

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05899 DATE 1/20/64



THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

NASA DASH NUMBER	MANUFACTURER'S PART NUMBER	RANGE (MICRONS HG.)
-001	VT-6-DV-6M	0-1000

MASTER

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± — ± .02 ± —
		DO NOT SCALE THIS DRAWING
		MATERIAL
		NONE
		HEAT TREATMENT
		NONE
		FINAL FINISH
		NONE
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Bender</i> 20-DEC-63 CHECKED <i>W. H. C.</i> 31-DEC-63 APPROVAL <i>J. W. E.</i> 31-DEC-63 APPROVAL <i>J. G. H.</i> 1/13/64		GAGE - VACUUM	
NASA APPROVAL <i>J. G. H.</i> MIT APPROVAL <i>W. H. C.</i> 22/64		CODE IDENT NO.	SIZE
		C	1016288
		SCALE NONE	WT
		SHEET 1	OF 1

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVA
A	REPLACED WITH CHANGE BY REV. B PER TDRR 08148	20 MAY 64	JJJ C.

NASA DASH NUMBER	CONANT PART NUMBER
-001	5316 - 1/4

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED		
DIMENSIONS ARE IN INCHES		
TOLERANCES ON		
FRACTIONS	DECIMALS	ANGLES
± _____	± _____	± _____
DO NOT SCALE THIS DRAWING		
MATERIAL		
SEE REQUIREMENTS		
HEAT TREATMENT		
NONE		
FINAL FINISH		
NONE		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION		FIN
LIST OF MATERIALS				
MIT INSTRUMENTATION LAB CAMBRIDGE MASS DWG NO Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS		
DRAWN <i>B. Bobbit</i> DATE <i>15 MAR 64</i> CHECKED <i>W. J. C.</i> <i>9 JAN 64</i> APPROVAL <i>R. H. Brown</i> <i>7 Jan 64</i> APPROVAL <i>L. J. Gorman</i> <i>1/1/64</i>		VALVE - 5 WAY, PANEL MOUNT (SPECIAL)		
SPECIFICATION CONTROL DRAWING				
NASA APPROVAL <i>[Signature]</i> MIT APPROVAL <i>W. J. C.</i>		CODE IDENT NO. SCALE NONE	SIZE C	NASA DRAWING NO. 1016289
		WT	SHEET 1 OF 1	

THE PART NUMBER IS THE DRAWING NUMBER
PLUG THE APPLICABLE DASH NUMBER

066399

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

- (a) BODY: STAINLESS STEEL, TYPE 316
(b) PLUG: TEFLON

(2) FINISH: PASSIVATE PER MIL-F-14072, E300

(3) MARKING:

- (a) PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION PER MIL-STD-129:

SUPPLIER'S NAME.

NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.

DATE CODE, OR DATE OF MANUFACTURE.

- (b) MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

3. DESIGN REQUIREMENTS:

- A. STANDARD VALVE TO BE MODIFIED BY REDUCING THE BODY AND PLUG DRILLINGS FROM 1/4 TO 1/8.

- B. VALVE TO HAVE DETENT POSITIONING.

- C. VALVE TO BE PANEL MOUNTING TYPE.

NASA DASH NUMBER	THREAD SIZE S	PIPE THREAD T	A	B	C	D	E	F	G	H	J	MANUFACTURER'S PART NUMBER (REF)
-001	1/4-20UNC-2B	1/4	2.00	2.44	.44	3.00	.75	1.00	.75	1.375	.12	5316-1/4

THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

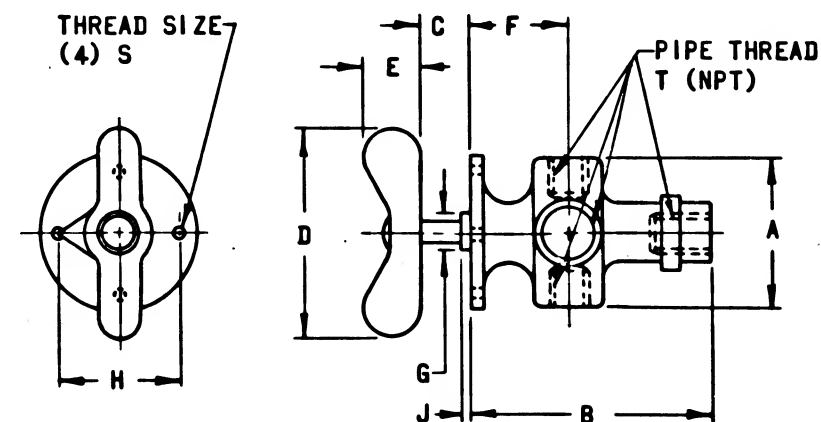
		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± .005 ± .02 ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
		FINAL FINISH
		NONE
NEXT ASSY	USED ON	
APPLICATION		

B 1016289

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	REPLACES REV. A WITH CHANGE PER TDRR 08148	20 MAY 64	JJJ CP

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. _____ DATE



REPLACES REV A WITH CHANGE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN D. DOBBERT DATE 7 JAN 64 CHECKED MOLYE 7 JAN 64 APPROVAL [Signature] 7 JAN 64 APPROVAL [Signature] 21 MAR 64		VALVE - 5 WAY, PANEL MOUNT (SPECIAL)	
NASA APPROVAL _____ MIT APPROVAL _____		CODE IDENT NO. SIZE C	NASA DRAWING NO. 1016289
SCALE NONE WT		SHEET 1 OF 1	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

- BODY: STAINLESS STEEL, TYPE 316
- PLUG: TEFLON

(2) FINISH: PASSIVATE PER MIL-F-14072, E300

(3) MARKING:

- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
DATE CODE, OR DATE OF MANUFACTURE
- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

3. DESIGN REQUIREMENTS:

- STANDARD VALVE TO BE MODIFIED BY REDUCING THE BODY AND PLUG DRILLINGS FROM 1/4 TO 1/8.
- VALVE TO HAVE DETENT POSITIONING.
- VALVE TO BE PANEL MOUNTING TYPE.

NASA DASH NUMBER	CONANT PART NUMBER
-001	5316 - 1/4

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

MASTER

6829101

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05883

DATE

1/22/64

THE PART NUMBER IS THE DRAWING NUMBER
PLUG THE APPLICABLE DASH NUMBER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>D. DeBart</i> DATE <i>1 JAN 64</i> CHECKED <i>M. G. E.</i> <i>7 JAN 64</i> APPROVAL <i>R. K. Gorman</i> <i>7 Jan 64</i> APPROVAL <i>L. J. Gorman</i> <i>1/1/64</i>		VALVE - 5 WAY, PANEL MOUNT (SPECIAL)	
SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		CODE IDENT NO.	NASA DRAWING NO.
FINAL FINISH NONE		C	1016289
NEXT ASSY		SCALE NONE	WT
USED ON		SHEET 1 OF 1	
APPLICATION			

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

1016291

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	CHANGE IN ACCORDANCE WITH CM 196952 PER TDRR 079779	16 APR 64	EF

REQUIREMENTS:

1. GENERAL:

- A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- (1) DIMENSIONS: SHALL BE AS SHOWN.
(2) MARKING:

- a. PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
b. PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
MANUFACTURER'S NAME
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER
c. MANUFACTURER'S PART NUMBER, LOT OR SERIAL NUMBER AND DATE CODE OR DATE OF MANUFACTURE MAY APPEAR ON THE PART OR PACKAGE.

3. DESIGN REQUIREMENTS:

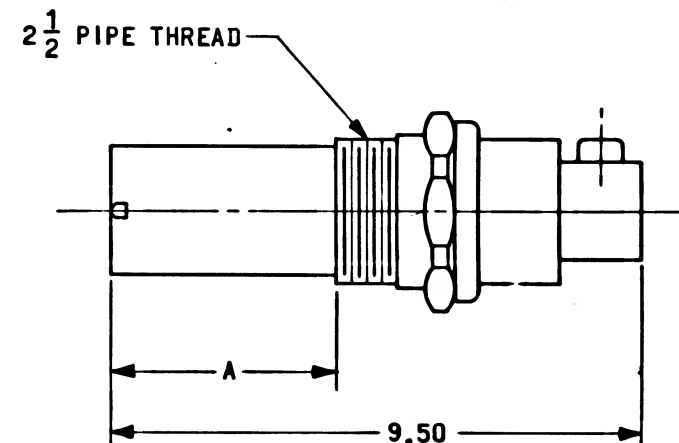
A. CONTACT RATINGS:

MOTOR LOAD 115V. AC 230V. AC
FULL LOAD 7.4 AMP. 3.7 AMP.
LOCKED ROTOR 44.4 AMP. 22.2 AMP.

NASA DASH NUMBER	INSERTION LENGTH A	MANUFACTURER'S PART NUMBER
-001	4.12	69

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05883 DATE 1/22/64



THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± ± .02 ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		NONE
		HEAT TREATMENT
		NONE
		FINAL FINISH
		NONE
NEXT ASSY	USED ON	
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
		LIST OF MATERIALS	
	MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
	DRAWN <i>Bender</i> DATE 8 JAN 63 CHECKED <i>Ed Feller</i> 9 JAN 64 APPROVAL <i>J. Gelman</i> 10 JAN 64	SWITCH, FLOAT ALARM AND CUT-OFF	
	NASA APPROVAL <i>[Signature]</i> MIT APPROVAL <i>[Signature]</i>	SPECIFICATION CONTROL DRAWING CODE IDENT NO. SIZE C 1016291	
		SCALE NONE WT	SHEET 1 OF 1

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- (1) DIMENSIONS: SHALL BE AS SHOWN.
(2) MARKING: SHALL BE PERMANENTLY AND LEGIBLY MARKED WITH THE MANUFACTURERS NAME OR SYMBOL AND PART NUMBER.

3. DESIGN REQUIREMENTS:

A. CONTACT RATINGS:

MOTOR LOAD 115V. AC 230V. AC
FULL LOAD 7.4 AMP. 3.7 AMP.
LOCKED ROTOR 44.4 AMP. 22.2 AMP.

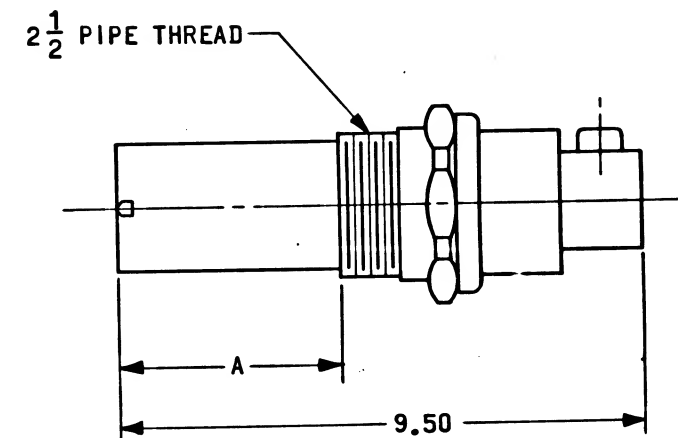
NASA DASH NUMBER	INSERTION LENGTH A	MANUFACTURER'S PART NUMBER
-001	4.12	

PROCURE ONLY FROM APPROVED SOURCES LISTED
ON CONTRACTORS ACCEPTABLE SUPPLIERS LIST.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
		TOLERANCES ON
		FRACTIONS DECIMALS ANGLES
		± — ± .02 ± —
		DO NOT SCALE THIS DRAWING
		MATERIAL
		NONE
		HEAT TREATMENT
		NONE
		FINAL FINISH
		NONE
NEXT ASSY	USED ON	
		APPLICATION

B 101629101

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	CHANGE IN ACCORDANCE WITH CM 196952 PER TDRR 07979	16 APR 64	EF
B	REVISED AND UPGRADE TO CLASS A PER TDRR 21941	1 SEPT 65	EM



THE PART NUMBER IS THE DRAWING NUMBER
PLUS THE APPLICABLE DASH NUMBER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Bender</i> 8 JAN 63 CHECKED <i>Ed Foster</i> 9 JAN 64 APPROVAL <i>Redden</i> 9 JAN 64		SWITCH, FLOAT ALARM AND CUT-OFF	
APPROVAL <i>Johman</i> 12/1/64		SPECIFICATION CONTROL DRAWING	
NASA APPROVAL <i>Borland</i>		CODE IDENT NO. 80230	SIZE C
MIT APPROVAL <i>W. Hoff</i> 22 JAN 64		SCALE NONE	WT
		NASA DRAWING NO. 1016291	
		SHEET 1 OF 1	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL, ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- DIMENSIONS: SHALL BE AS SHOWN.
- MARKING:

- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
MANUFACTURER'S NAME
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER
- MANUFACTURER'S PART NUMBER, LOT OR SERIAL NUMBER AND DATE CODE OR DATE OF MANUFACTURE MAY APPEAR ON THE PART OR PACKAGE.

3. DESIGN REQUIREMENTS:

A. CONTACT RATINGS:

MOTOR LOAD 115V. AC 230V. AC
FULL LOAD 7.4 AMP. 3.7 AMP.
LOCKED ROTOR 44.4 AMP. 22.2 AMP.

NASA DASH NUMBER	INSERTION LENGTH A	MANUFACTURER'S PART NUMBER
-001	4.12	69

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING

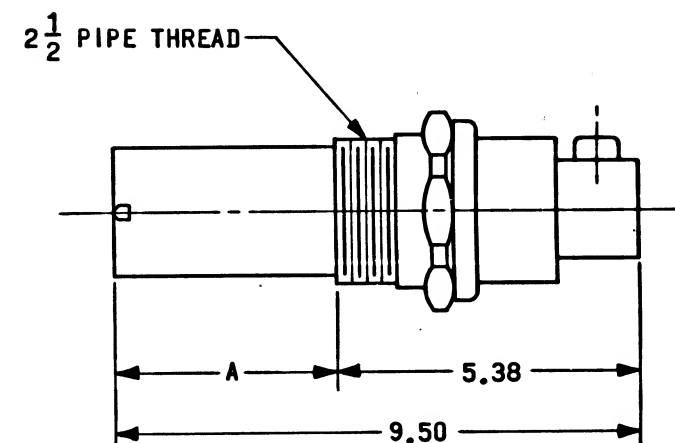
POSTER

1629101

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05883 DATE 1/22/64



THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>Bender</i> DATE 8-JAN-63 CHECKED <i>Ed Foster</i> 9 JAN 64 APPROVAL <i>Ed Foster</i> APPROVAL <i>Johman</i>		SWITCH, FLOAT ALARM AND CUT-OFF	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± — ± .02 ± — DO NOT SCALE THIS DRAWING MATERIAL NONE HEAT TREATMENT NONE FINAL FINISH NONE		SPECIFICATION CONTROL DRAWING CODE IDENT NO. SIZE C 1016291	
NEXT ASSY	USED ON	SCALE NONE WT	SHEET 1 OF 1
APPLICATION		1	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVERTING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS (3).

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- MATERIAL: ALUMINUM, ALLOY
- FINISH: ANODIZED
- DIMENSIONS: PER DRAWING
- MARKING:

a. PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA PART NUMBER AND REVISION LETTER.

b. PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:

SUPPLIER'S NAME

NASA PART NUMBER, AND REVISION LETTER

DATE CODE, OR DATE OF MANUFACTURE

c. MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

NASA PART NUMBER		DIMENSIONS					CABLE OPENING		WEIGHT OZ.	STYLE	DIM XCL
		A	B	C	D	E	F	G			
1016292-091	MRE 9H-1	.28	1.00	1.62	1.31	.44	.31 DIA	-	.3	A	1.000
141	MRE 14H-1	.28	1.28	1.69	1.25	.50	.38 DIA	-	.3		.936
201	MRE 20H-1	.28	1.28	2.00	1.53	.50	.38 DIA	-	.3		1.250
341	MRE 34H-1	.28	1.25	2.42	2.00	.83	.66 DIA	-	.6		1.688
411	MRE 41H-1	.28	1.25	3.05	2.62	.50	.69	.44	.6		2.312
421	MRE 42H-1	.09	1.30	2.73	2.31	.83	.62	.50	.6		2.000
501	MRE 50H-1	.09	1.30	3.02	2.59	.83	.62	.50	.7		2.282
751	MRE 75H-1	.09	1.31	3.02	2.59	1.19	.62	.88	1.0		2.282
090	MRE 9H	.28	1.00	1.31	1.31	.44	.31 DIA	-	.3	B	1.000
140	MRE 14H	.28	.75	1.19	1.25	.50	.44 DIA	-	.3		.936
200	MRE 20H	.28	.75	1.19	1.56	.50	.44 DIA	-	.3		1.250
340	MRE 34H	.28	1.25	1.67	2.00	.83	.66 DIA	-	.6		1.688
410	MRE 41H	.28	1.25	1.69	2.62	.50	.69	.44	.6		2.312
420	MRE 42H	.09	1.30	1.72	2.31	.83	.62	.50	.7		2.000
500	MRE 50H	.09	1.30	1.72	2.59	.83	.62 DIA	-	.8		2.282
750	MRE 75H	.09	1.31	1.73	2.59	1.19	.62	.88	1.0		2.282

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING

MASTER

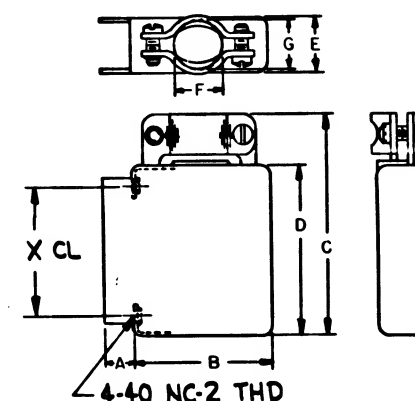
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REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL

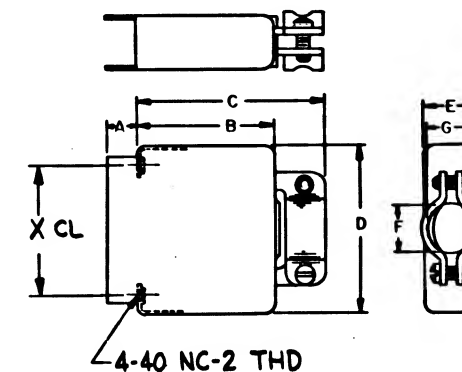
FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05 883 DATE

1/22/64



STYLE A
SIDE CABLE OPENING



STYLE B
TOP CABLE OPENING

QTY REQ	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>W. Williams</i> DATE 7 JAN 64 CHECKED <i>M. Manning</i> 10 JAN 64 APPROVAL <i>L. Johnson</i> 12 JAN 64		SHIELD, CONNECTOR ELECTRICAL	
SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		CODE IDENT NO.	NASA DRAWING NO.
FINAL FINISH		C	1016292
APPLICATION		SCALE NONE	WT
SEE REQUIREMENTS		SHEET 1 OF 1	

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION		FIND NO.
LIST OF MATERIALS				
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS		
DRAWN <i>Patterson</i> DATE <i>7 JAN 64</i> CHECKED <i>Bishop</i> <i>8 JAN 64</i> APPROVAL <i>J. V. MEAN</i> <i>8 JAN 64</i> APPROVAL <i>J. G. MEAN</i> <i>12/1/64</i>		CHAIN - BEAD		
SPECIFICATION CONTROL DRAWING				
NASA APPROVAL <i>B. Bassard</i>	CODE IDENT NO.	SIZE C	NASA DRAWING NO. 1016293	
MIT APPROVAL <i>W. K. ...</i>	SCALE NONE	WT	SHEET 1 OF 1	

REQUIREMENTS:

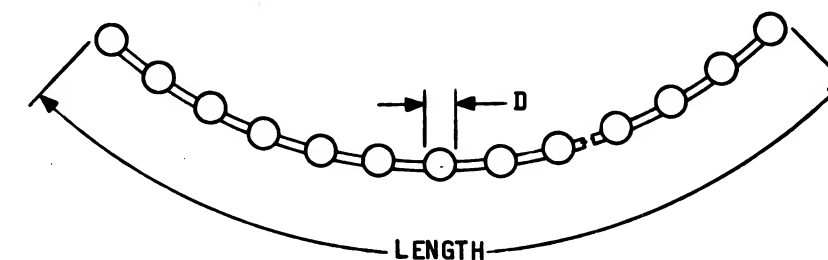
1. GENERAL:
 - A. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
 - B. SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
2. INSPECTION AND ACCEPTANCE:
 - A. MECHANICAL REQUIREMENTS:
 - (1) MATERIAL: STAINLESS STEEL
 - (2) FINISH: PASSIVATE
 - (3) DIMENSIONS: PER DRAWING AND TABLE
 - (4) MARKING:
 - a. PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER ND 1002019 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
 - b. PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
 - SUPPLIER'S NAME.
 - NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
 - SUPPLIER'S LOT OR SERIAL NUMBER.
 - DATE CODE, OR DATE OF MANUFACTURE.
 - c. MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
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FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 05883 DATE 1/20/64



THE PART NUMBER IS THE DRAWING NUMBER
PLUS THE APPLICABLE DASH NUMBER

NASA PART NUMBER	BEAD DIA D (REF)	APPROX. NO. OF BEADS PER FOOT	LENGTH	TENSILE STRENGTH (LBS)
-001	1/8	72	1"	30

PROCURE ONLY FROM APPROVED SOURCES LISTED
ON ND 1002034 FOR THIS DRAWING

Figure 1 shows a 4x4 grid of nodes. The nodes are arranged in a square lattice. The top row has nodes labeled 1, 2, 3, 4. The second row has nodes labeled 5, 6, 7, 8. The third row has nodes labeled 9, 10, 11, 12. The bottom row has nodes labeled 13, 14, 15, 16. The nodes are connected by horizontal and vertical lines, forming a grid. The nodes are numbered 1 through 16, starting from the top-left and moving right, then down to the next row.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ±
		DO NOT SCALE THIS DRAWING
		MATERIAL
		SEE REQUIREMENTS
		HEAT TREATMENT
		NONE
NEXT ASSY	USED ON	FINAL FINISH
APPLICATION		SEE REQUIREMENTS

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION		FINI NO.
LIST OF MATERIALS				
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. DWG. NO. <u>Contract NAS 9-497</u>		MANNED SPACECRAFT CENTER HOUSTON, TEXAS		
DRAWN <u>Patterson</u> DATE <u>7 JAN 64</u> CHECKED <u>Patterson</u> <u>8 JAN 64</u> APPROVAL <u>J.V. WEFAN</u> <u>8 JAN 64</u> APPROVAL <u>Gederman</u> <u>12/1/64</u>		CHAIN - BEAD SPECIFICATION CONTROL DRAWING		
NASA APPROVAL <u>[Signature]</u> MIT APPROVAL <u>[Signature]</u>		CODE IDENT NO. []	SIZE C	NASA DRAWING NO. 1016293
		SCALE <u>NONE</u>	WT	SHEET <u>1</u> OF <u>1</u>

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS, IN ANY MANNER, LICENSES THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERE TO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN MIL-Q-9858

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- MATERIAL: COPPER (ASTM B75-60 TYPE DLP, LIGHT DRAWN).
- FINISH: TIN PLATE.
- DIMENSIONS: REFERENCE TABLE I
- MARKING:
 - PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:
SUPPLIER'S NAME
NASA PART NUMBER
 - MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

TABLE I

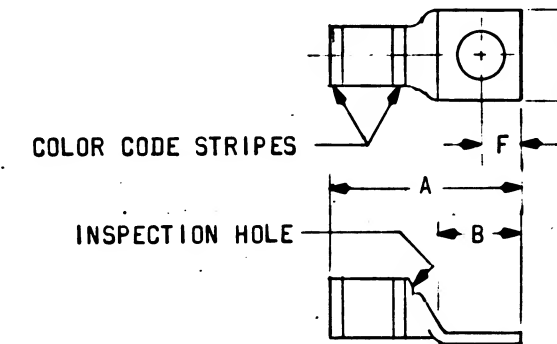
NASA DASH NUMBER	AWG (REF) SIZE	COLOR CODE	STUD SIZE (REF)	A (REF)	B	C	F	THOMAS & BETTS CRIMPING TOOL (REF)	THOMAS & BETTS CATALOG ITEM (REF)	WIRE STRIPPING RECOMMEND LENGTH (REF)
-001	8	RED	10	1.062	.468	.406	.218	TBM5 (RED DIE)	54104	.437
-002	8	RED	1/4	1.156	.562	.468	.250	TBM5 (RED DIE)	54130	.437
-004	8	RED	3/8	1.406	.812	.593	.375	TBM5 (RED DIE)	54132	.437
-005	6	BLUE	10	1.156	.468	.437	.218	TBM5 (BLUE DIE)	54134	.437
-006	6	BLUE	1/4	1.187	.562	.437	.250	TBM5 (BLUE DIE)	54105	.437
-009	4	GREY	10	1.187	.468	.562	.218	TBM5 (GREY DIE)	54138	.562
-010	4	GREY	1/4	1.281	.562	.562	.250	TBM5 (GREY DIE)	54106	.562
-012	4	GREY	3/8	1.531	.812	.593	.375	TBM5 (GREY DIE)	54140	.562
-013	2	BROWN	1/4	1.375	.562	.593	.250	TBM5 (BROWN DIE)	54107	.625
-015	2	BROWN	3/8	1.625	.812	.656	.375	TBM5 (BROWN DIE)	54143	.625
-021	1/0	PINK	1/4	1.625	.718	.750	.343	TBM5 (PINK DIE)	54152	.687
-023	1/0	PINK	3/8	1.718	.812	.750	.375	TBM5 (PINK DIE)	54109	.687
-025	2/0	BLACK	1/4	1.750	.718	.812	.343	TBM5 (BLACK DIE)	54157	.750
-027	2/0	BLACK	3/8	1.718	.812	.812	.375	TBM5 (BLACK DIE)	54110	.750
-028	2/0	BLACK	1/2	2.031	1.062	.812	.500	TBM5 (BLACK DIE)	54160	.750

PROCURE ONLY FROM SOURCES LISTED ON CONTRACTOR'S ACCEPTABLE SUPPLIERS LIST FOR THIS DRAWING.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON	
FRACTIONS	DECIMALS ANGLES
\pm	$\pm .015$ \pm
DO NOT SCALE THIS DRAWING	
MATERIAL	
SEE REQUIREMENTS	
HEAT TREATMENT	
NONE	
FINAL FINISH	
SEE REQUIREMENTS	
NEXT ASSY	USED ON
APPLICATION	

1016295

REVISIONS TDRR 06207			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED AND UPGRADED TO CLASS A PER TDRR 30728	26 AUG 66	



THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON TEXAS	
DRAWN <i>Parks</i> DATE 10 JAN 64 CHECKED <i>W. Manning</i> 12 JAN 64 APPROVAL <i>W. Manning</i> 19 JAN 64 APPROVAL <i>W. Manning</i> 1/3/64		TERMINAL - LUG (RECTANGULAR TONGUE, CRIMP STYLE) SPECIFICATION CONTROL DRAWING	
NASA APPROVAL <i>W. Manning</i> 1/4/64 MIT APPROVAL <i>W. Manning</i> 1/4/64		CODE IDENT NO 99974	SIZE C
		NASA DRAWING NO 1016295	
		SCALE NONE	WT
		SHEET 1 OF 1	

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REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- MATERIAL: COPPER (ASTM B75-60 TYPE DLP, LIGHT DRAWN).
- FINISH: TIN PLATE.
- DIMENSIONS: REFERENCE TABLE I
- MARKING:

- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:

SUPPLIER'S NAME
NASA DRAWING NUMBER, DASH NUMBER, AND
REVISION LETTER.
DATE CODE, OR DATE OF MANUFACTURE.

- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

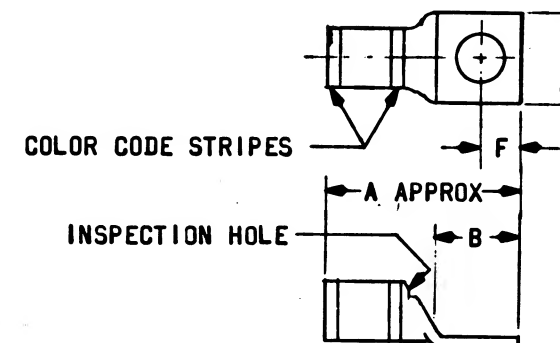
TABLE I

NASA DASH NUMBER	AWG (REF) SIZE	COLOR CODE	STUD SIZE (REF)	A	B	C	F	THOMAS & BETTS CRIMPING TOOL (REF)	THOMAS & BETTS CATALOG ITEM	WIRE STRIPPING RECOMMEND LENGTH (REF)
-001	8	RED	10	1.062	.468	.406	.218	TBM5 (RED DIE)	54104	.437
-002	8	RED	1/4	1.156	.562	.468	.250	TBM5 (RED DIE)	54130	.437
-004	8	RED	3/8	1.406	.812	.593	.375	TBM5 (RED DIE)	54132	.437
-005	6	BLUE	10	1.156	.468	.437	.218	TBM5 (BLUE DIE)	54134	.437
-006	6	BLUE	1/4	1.187	.562	.437	.250	TBM5 (BLUE DIE)	54105	.437
-009	4	GREY	10	1.187	.468	.562	.218	TBM5 (GREY DIE)	54138	.562
-010	4	GREY	1/4	1.281	.562	.562	.250	TBM5 (GREY DIE)	54106	.562
-012	4	GREY	3/8	1.531	.812	.593	.375	TBM5 (GREY DIE)	54140	.562
-013	2	BROWN	1/4	1.375	.562	.593	.250	TBM5 (BROWN DIE)	54107	.625
-015	2	BROWN	3/8	1.625	.812	.656	.375	TBM5 (BROWN DIE)	54143	.625
-021	1/0	PINK	1/4	1.625	.718	.750	.343	TBM5 (PINK DIE)	54153	.687
-023	1/0	PINK	3/8	1.718	.812	.750	.375	TBM5 (PINK DIE)	54109	.687
-025	2/0	BLACK	1/4	1.750	.718	.812	.343	TBM5 (BLACK DIE)	54157	.750
-027	2/0	BLACK	3/8	1.718	.812	.812	.375	TBM5 (BLACK DIE)	54110	.750
-028	2/0	BLACK	1/2	2.031	1.062	.812	.500	TBM5 (BLACK DIE)	54160	.750

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 06207 DATE 2-6-64



THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN: Parks DATE: 10 JAN 64 CHECKED: [Signature] 14 JAN 64 APPROVAL: [Signature] 19 JAN 64 APPROVAL: [Signature] 11 FEB 64		TERMINAL - LUG (RECTANGULAR TONGUE, CRIMP STYLE) SPECIFICATION CONTROL DRAWING	
NASA APPROVAL: [Signature] 21 FEB 64 MIT APPROVAL: [Signature] 4 FEB 64		CODE IDENT NO. SIZE C	NASA DRAWING NO. 1016295
SCALE NONE WT		SHEET 1 OF 1	

NOTICE - THIS DRAWING SHOWS SPECIFICATIONS OR OTHER DATA AND IS NOT FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION. THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OMISSIONS, ERRORS, OR THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE DATA HEREON. SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFERRING ANY RIGHTS OR PERMISSIONS TO MANUFACTURE, USE, OR SELL ANY PRODUCT OR SERVICE THAT MAY IN ANY WAY BE RELATED THEREON.

REQUIREMENTS:

1. GENERAL:

- UNITED TRANSFORMER PART NUMBER FH-937
- SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
- DESIGN TO BE IN CONFORMANCE WITH SPECIFICATION MIL-T-27.
- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.

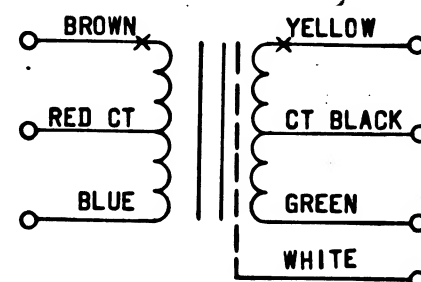
2. INSPECTION AND ACCEPTANCE:

- UNIT SHALL MEET ALL REQUIREMENTS OF TABLE 1.
- MARKING: MARK PERMANENTLY AND LEGIBLY WITH THE NASA DRAWING NUMBER AND REVISION LETTER, THE MANUFACTURER'S NAME AND/OR SYMBOL AND CONNECTION DATA. THE MANUFACTURER'S PART NUMBER MAY APPEAR ON PART AND PACKAGE
- LEADS: NO. 26 AWG SOLID COPPER, TIN PLATED, PLASTIC INSULATED, STRIPPED PORTION SHALL BE SOLDER COATED. TIN PLATING BENEATH PLASTIC INSULATION SHALL BE 10 TO 70 MICROINCHES THICK.
- COLOR: BLACK, SHADE NO. 37038 PER FED-STD-595.

3. DESIGN REQUIREMENTS:

- THE UNIT SHALL MEET ALL REQUIREMENTS OF MIL-T-27 FOR GRADE 4, CLASS R, LIFE EXPECTANCY X IN AN AMBIENT TEMPERATURE OF 65°C
- ALTITUDE: 10,000 FEET OPERATING
50,000 FEET NON-OPERATING
- AMBIENT OPERATING TEMPERATURE RANGE: 0°C TO +65°C
- DC UNBALANCE IN PRIMARY: 2 MA MAXIMUM
- RATED POWER LEVEL: 100 MW
- WORKING VOLTAGE BETWEEN WINDINGS AND FROM WINDING TO CASE: 49 VOLTS MAXIMUM INSTANTANEOUS.

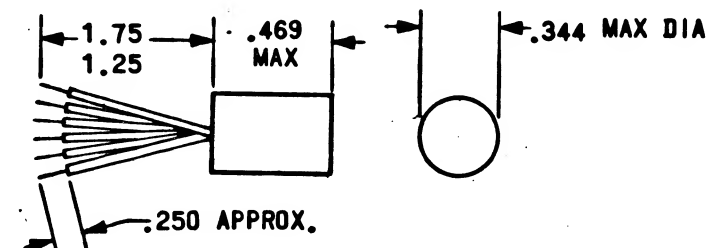
SCHEMATIC DIAGRAM



VOLTAGES AND CURRENTS ARE RMS VALUES UNLESS OTHERWISE NOTED

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 06388 DATE 2/18/64



A	-
SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON	
FRACTIONS	DECIMALS ANGLES
±	± ±
DO NOT SCALE THIS DRAWING	
MATERIAL	
HEAT TREATMENT	
FINAL FINISH	
NEXT ASSY	USED ON
APPLICATION	

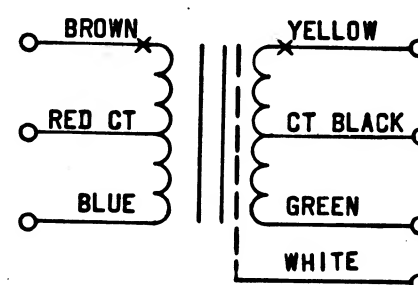
QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <u>R Fox</u> DATE <u>20 JAN 64</u>		TRANSFORMER, AUDIO FREQUENCY (1:1.41 TURNS RATIO)	
CHECKED <u>Ed Foster</u> 23 JAN 64		SPECIFICATION CONTROL DRAWING	
APPROVAL <u>E. J. R. R.</u> 23 JAN 64		CODE IDENT NO. SIZE NASA DRAWING NO.	
APPROVAL <u>E. J. R. R.</u> 23 JAN 64		C 1016299	
NASA APPROVAL <u>W. J. R.</u> 2-18-64		SCALE NONE WT	
MIT APPROVAL <u>W. J. R.</u> 2-18-64		SHEET 1 OF 2	

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A SPECIFICALLY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY DISCLAIMS ANY RESPONSIBILITY FOR ANY OMISSIONS, ERRORS, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORWARDED, FURNISHED, OR SO ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER ENDORSING THE VALUES OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

REQUIREMENTS:

1. GENERAL:
 - A. UNITED TRANSFORMER PART NUMBER DO-T52 (FOR REF)
 - B. SUPPLIER SHALL CONFORM TO THE QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
 - C. DESIGN TO BE IN CONFORMANCE WITH SPECIFICATION MIL-T-27.
 - D. INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
2. INSPECTION AND ACCEPTANCE:
 - A. UNIT SHALL MEET ALL REQUIREMENTS OF TABLE 1.
 - B. MARKING: MARK PERMANENTLY AND LEGIBLY WITH THE NASA DRAWING NUMBER AND REVISION LETTER, THE MANUFACTURER'S NAME AND/OR SYMBOL AND CONNECTION DATA. THE MANUFACTURER'S PART NUMBER MAY APPEAR ON PART AND PACKAGE
 - C. LEADS: NO. 26 AWG SOLID COPPER, TIN PLATED, PLASTIC INSULATED, STRIPPED PORTION SHALL BE SOLDER COATED. TIN PLATING BENEATH PLASTIC INSULATION SHALL BE 10 TO 70 MICROINCHES THICK.
 - D. COLOR: BLACK, SHADE NO. 37038 PER FED-STD-595.
3. DESIGN REQUIREMENTS:
 - A. THE UNIT SHALL MEET ALL REQUIREMENTS OF MIL-T-27 FOR GRADE 4, CLASS R, LIFE EXPECTANCY X IN AN AMBIENT TEMPERATURE OF 65°C
 - B. ALTITUDE: 10,000 FEET OPERATING
50,000 FEET NON-OPERATING
 - C. AMBIENT OPERATING TEMPERATURE RANGE: 0°C TO +65°C
 - D. DC UNBALANCE IN PRIMARY: 2 MA MAXIMUM
 - E. RATED POWER LEVEL: 100 MW
 - F. WORKING VOLTAGE BETWEEN WINDINGS AND FROM WINDING TO CASE: 49 VOLTS MAXIMUM INSTANTANEOUS.

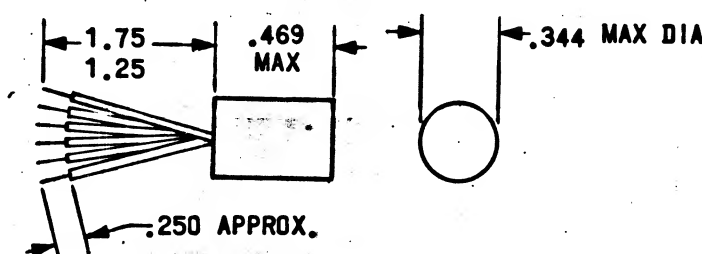
SCHEMATIC DIAGRAM



VOLTAGES AND CURRENTS ARE RMS VALUES UNLESS OTHERWISE NOTED

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 06389 DATE 2/18/64

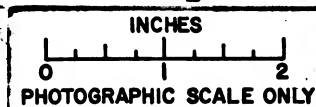


SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES ± ± ±
		DO NOT SCALE THIS DRAWING MATERIAL
		HEAT TREATMENT
NEXT ASSY	USED ON	FINAL FINISH
APPLICATION		

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <u>R Fox</u> DATE <u>20 JAN 64</u> CHECKED <u>Ed Felt</u> <u>23 JAN 64</u> APPROVAL <u>E. Felt</u> <u>23 JAN 64</u> APPROVAL <u>J. Gelman</u> <u>2/1/64</u>		TRANSFORMER, AUDIO FREQUENCY (1:1.41 TURNS RATIO)	
NASA APPROVAL <u>W. J. R...</u> <u>2-18-64</u> MIT APPROVAL <u>W. J. R...</u> <u>2-18-64</u>		CODE IDENT NO. <u>C</u> SCALE NONE WT	NASA DRAWING NO. <u>1016299</u> SHEET <u>1</u> OF <u>2</u>

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY FOR ANY OMISSION, MISSTATEMENT, OR THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IS ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFERRING ANY RIGHTS OR PERMISSIONS TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREIN.

6629101

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL

TABLE I
INSPECTION TESTS

NUMBERS IN PARAGRAPH COLUMN REFER TO PARAGRAPH NUMBER IN SPECIFICATION MIL-T-27.	
PARAGRAPH	
4.7.3.2.1	SEALING
4.7.5	DIELECTRIC STRENGTH: APPLY 100 VOLTS (RMS) BETWEEN WINDINGS, BETWEEN WINDINGS AND CASE AND BETWEEN WINDINGS AND SHIELD.
4.7.6	INDUCED VOLTAGE: APPLY 40 VOLTS, 2000 CPS TO TERMINALS BROWN AND BLUE, SECONDARY OPEN.
4.7.7	INSULATION RESISTANCE: 10,000 MEGOHMS MINIMUM AT 25°C. (USE 100 V DC MAX).
4.7.9.3	DC RESISTANCE (AT 25°C) R (BROWN - BLUE) = 400 OHMS MAXIMUM; R (YELLOW - GREEN) = 750 OHMS MAXIMUM.
4.7.9.4	INDUCTANCE: SHALL BE 0.52 HENRYS MINIMUM WITH 5 VOLTS, 1000 CPS, 0 MADC (BROWN - BLUE)
4.7.9.5	DISTORTION (AT 1 KC): 5% MAXIMUM WITH 8,000 OHM LOAD AT 100 MW OUTPUT.
4.7.9.7	FREQUENCY RESPONSE: (REFERENCE FREQUENCY 1KC): ±3 DB FROM 300 CPS TO 20KC. E_s SHALL BE DETERMINED AT 1KC WITH AN OUTPUT LOAD (YELLOW TO GREEN OF 8,000 OHMS AT 1 MW, A SOURCE IMPEDANCE OF 4,000 OHMS AND 1 MADC. E_s SHALL BE HELD CONSTANT OVER THE FREQUENCY RANGE.
4.7.9.14	POLARITY: LEADS BROWN AND YELLOW SHALL BE OF LIKE POLARITY.
4.7.9.17	NO LOAD VOLTAGE RATIO: WITH 5 VOLTS, 1 KC (BROWN TO BLUE), V (BROWN TO BLUE)/V (YELLOW TO GREEN) = 1:1.41 ± 3% V(BROWN TO RED)/V(RED TO BLUE) = 1 ± 2%. V(YELLOW TO BLACK)/V(BLACK - GREEN) = 1 ± 2%.

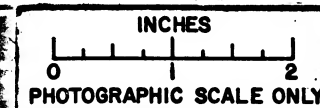
FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 06388 DATE

2/18/64

MASTER

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>R Fox</i> DATE 20 JAN 64 CHECKED <i>Ed Foster</i> 23 JAN 64 APPROVAL <i>Ed Foster</i> 23 JAN 64 APPROVAL <i>L. J. Friedman</i> 2/18/64		TRANSFORMER, AUDIO FREQUENCY 1:1.41 TURNS RATIO)	
NASA APPROVAL <i>W. J. R. Rine</i> 2-18-64 MIT APPROVAL <i>W. J. R. Rine</i> 2/18/64		SPECIFICATION CONTROL DRAWING	
CODE IDENT NO.		SIZE	NASA DRAWING NO.
SCALE NONE		WT	1016299
			SHEET 2 OF 2



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- MATERIAL: STAINLESS STEEL, TYPE 347
- FINISH: PASSIVATE PER MIL-F-14072, E300
- DIMENSIONS: AS SHOWN
- MARKING:

(a) PACKAGE - INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION:

SUPPLIER'S NAME

NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.

DATE CODE, OR DATE OF MANUFACTURE

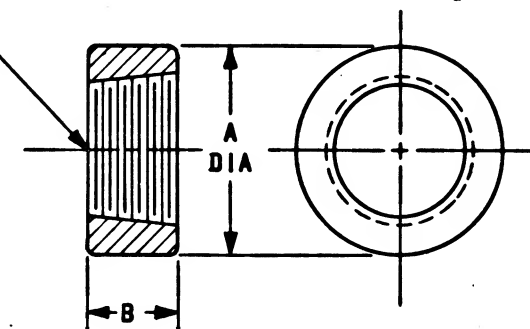
(b) MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 06388 DATE 2/18/64

NASA DASH NUMBER	PIPE THREAD T	A	B
-1	2-1/2	3.50	1.44

PIPE THREAD
T (NPT)

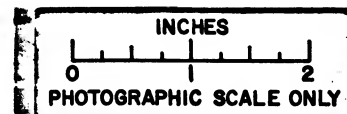


THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

MASTER

QTY REQD		PART OR IDENTIFYING NO.		NOMENCLATURE OR DESCRIPTION		FIND NO.	
LIST OF MATERIALS							
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Contract NAS 9-497				MANNED SPACECRAFT CENTER HOUSTON, TEXAS			
DRAWN <u>Bender</u> 27 JAN 64 CHECKED <u>Ed Foster</u> 29 JAN 64 APPROVAL <u>Ed Foster</u> 29 JAN 64 APPROVAL <u>Ed Foster</u> 29 JAN 64				FITTING, PIPE, HALF COUPLING			
SPECIFICATION CONTROL DRAWING				NASA DRAWING NO. 1016302			
HEAT TREATMENT NONE				CODE IDENT NO. C			
FINAL FINISH SEE REQUIREMENTS				SCALE NONE WT			
MIT APPROVAL <u>W. J. Rhine</u> 2-10-64 <u>W. J. Rhine</u> 14 FEB 64				SHEET 1 OF 1			



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT ASSUMES NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSES THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEY, HAS ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

EOE9101

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
- UNITS SHALL MEET ALL APPLICABLE REQUIREMENTS OF MIL-L-6363 WITH THE FOLLOWING QUALIFICATIONS.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL

- DIMENSIONS: SHOWN IN FIGURE.
- MARKING: EACH UNIT SHALL BE MARKED ON THE BASE WITH THE MANUFACTURER'S NAME OR TRADEMARK. EACH SHIPPING CONTAINER OR PACKAGE SHALL BE MARKED WITH THE NASA DRAWING NUMBER AND REVISION NUMBER.

B. DESIGN:

- LAMP TRADE NUMBER: IN TABLE
- VOLTAGE RATING: 10 VOLTS DC NOMINAL
- BASE: MINIATURE FLANGED
- BULB: T-1-3/4
- CURRENT DRAIN: .015 NOMINAL
- LIFE: 6000 HOURS MINIMUM

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 06801 DATE 3/3/64

NO PORTION OF THE GLASS SHALL BE MORE THAN .125 INCH FROM THE EXTENDED AXIS OF THE LAMP BASE

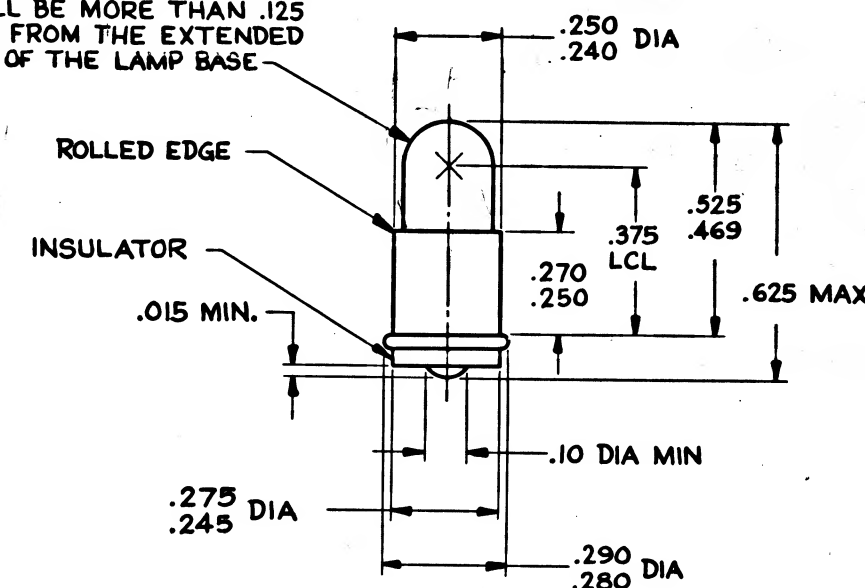


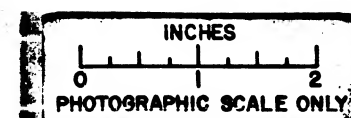
TABLE I

NASA DASH NUMBER	TRADE NUMBER
-001	344

THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>[Signature]</i> DATE <u>29 Jan 64</u> CHECKED <i>[Signature]</i> DATE <u>31 Jan 64</u> APPROVAL <i>[Signature]</i> DATE <u>31 Jan 64</u> APPROVAL <i>[Signature]</i> DATE <u>3/20/64</u>		LAMP, INCANDESCENT (MIDGET FLANGED BASE, T-1-3/4 BULB) SPECIFICATION CONTROL DRAWING	
NASA APPROVAL <i>[Signature]</i>	CODE IDENT NO.	SIZE	NASA DRAWING NO.
MIT APPROVAL <i>[Signature]</i>	C	C	1016303
SCALE NONE		WT	SHEET 1 OF 1



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT ASSUMES NO RESPONSIBILITY FOR ANY OBLIGATION WHATSOEVER. IT IS THE FACT THAT THE GOVERNMENT MAY HAVE FORWARDED, FORWARDED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY INDIATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREIN.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
- PERFORMANCE: PER MIL-N-25027.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

- STEEL
- LOCKING INSERT - NYLON

(2) FINISH:

- CADMIUM PLATE PER QQ-P-416, TYPE 1, CLASS 3

(3) DIMENSIONS: AS SHOWN

(4) MARKING:

- PACKAGE - INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION PER MIL-STD-129:

SUPPLIER'S NAME.

NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.

DATE CODE, OR DATE OF MANUFACTURE.

- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

NASA DASH NUMBER	THREAD T	BASE TRIM	A	B	C	D	E	F	G REF	MFR'S PART NUMBER (REF)
-004	4-40 NC-3B	FIG. 1	.984 .954	.406 .376	.359 .329	.690 .686	.218 .188	.103 .098	.250	22NA1-40
-006	6-32 NC-3B	FIG. 1	.984 .954	.406 .376	.359 .329	.690 .686	.234 .204	.103 .098	.313	22NA1-62
-008	8-32 NC-3B	FIG. 1	.984 .954	.406 .376	.359 .329	.690 .686	.296 .266	.103 .098	.375	22NA1-82
-010	10-24 NC-3B	FIG. 1	.984 .954	.406 .376	.359 .329	.690 .686	.296 .266	.103 .098	.375	22NA1-04
-012	1/4-20 UNC-3B	FIG. 1	1.296 1.266	.515 .485	.515 .485	1.002 .998	.328 .298	.103 .098	.438	22NA1-040
-014	5/16-18 UNC-3B	FIG. 2	1.296 1.266	.531 .501	.515 .485	1.002 .998	.374 .344	.135 .130	.500	22NA1-058

THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

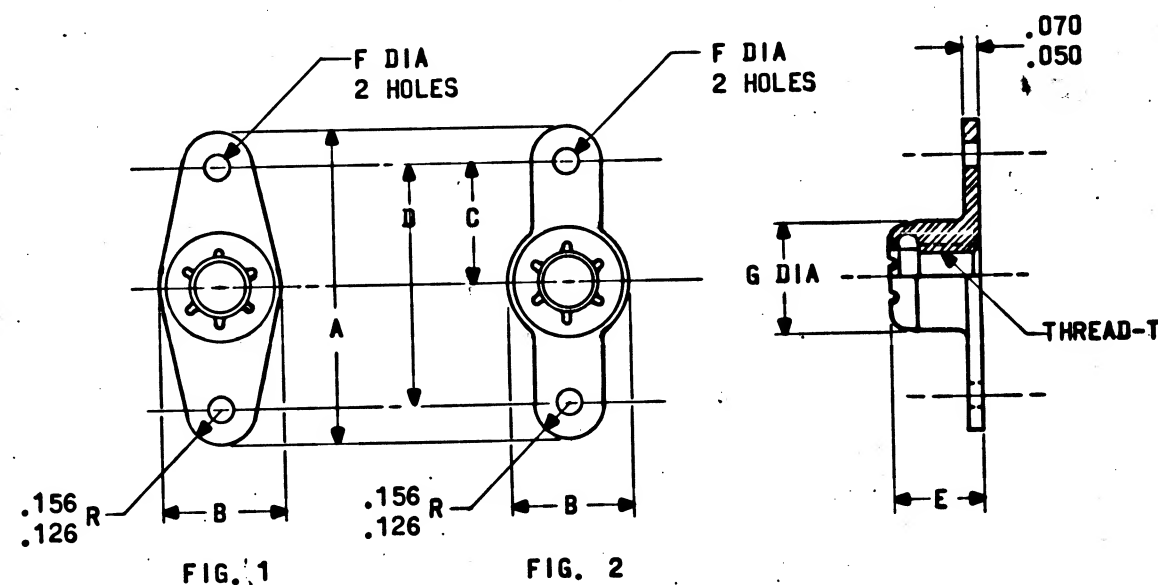
1016304

REVISIONS

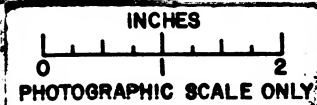
SYM DESCRIPTION DATE APPROVAL

FOR INFORMATION ONLY

CLASS B RELEASE TDR No. 06801 DATE 3/3/64



QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS. Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>W. J. Turner</i> DATE <i>10 FEB 64</i> CHECKED <i>E. J. Foster</i> DATE <i>10 FEB 64</i> APPROVAL <i>W. J. Turner</i> DATE <i>10 FEB 64</i> APPROVAL <i>W. J. Turner</i> DATE <i>10 FEB 64</i>		NUT-ANCHOR, TWO LUG, SELF LOCKING (NYLON INSERT)	
SEE REQUIREMENTS		SPECIFICATION CONTROL DRAWING	
HEAT TREATMENT NONE		NASA APPROVAL <i>W. J. Turner</i>	CODE IDENT NO. <i>C</i> SIZE <i>C</i> NASA DRAWING NO. <i>1016304</i>
FINAL FINISH NONE		MIT APPROVAL <i>W. J. Turner</i>	SCALE NONE WT <i>1</i> SHEET 1 OF 1



NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONFIRMING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THEREBY.

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.
- PERFORMANCE: PER MIL-N-25027.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

- MATERIAL: STEEL PER AMS 5010
- FINISH: CADMIUM PLATE PER QQ-P-416, TYPE 1, CLASS 3
- DIMENSIONS: AS SHOWN
- MARKING:
 - PACKAGE - INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION PER MIL-STD-129:
SUPPLIER'S NAME.
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.
DATE CODE, OR DATE OF MANUFACTURE.
 - MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

NASA DASH NUMBER	THREAD SIZE	A	B	C REF	D	E	L ±.015	DESIGN INFO (REF) INSTALLATION HOLE DIA.	MFG'S PART NUMBER
-001	8-32 NC-3B	.187 .157	.453 .423	.370	.325 .321	.302 .272	.125	.316 .312	22ND8-82
-002							.156		22ND10-82
-003							.188		22ND12-82
-004							.219		22ND14-82
-005							.250		22ND16-82
-006							.281		22ND18-82
-007							.313		22ND20-82
-008	10-32 NF-3B	.187 .157	.453 .423	.370	.325 .321	.302 .272	.125	.316 .312	22ND8-02
-009							.156		22ND10-02
-010							.188		22ND12-02
-011							.219		22ND14-02
-012							.250		22ND16-02
-013							.281		22ND18-02
-014							.313		22ND20-02
-015							.376		22ND24-02

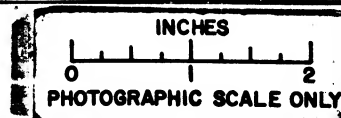
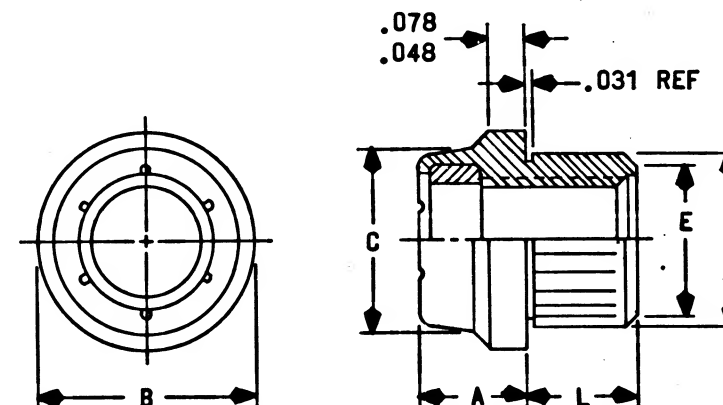
THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

PROCURE ONLY FROM APPROVED SOURCES LISTED ON ND 1002034 FOR THIS DRAWING.

NEXT ASSY USED ON APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
FRACTIONS DECIMALS ANGLES
± ± ±
DO NOT SCALE THIS DRAWING
MATERIAL
SEE REQUIREMENTS
HEAT TREATMENT
NONE
FINAL FINISH
NONE

QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	FIND NO.
LIST OF MATERIALS			
MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497		MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
DRAWN <i>D. Doherty</i> DATE <i>6/1/64</i> CHECKED <i>Ed Foster</i> 7 FEB 64 APPROVAL <i>Ed Foster</i> 7 Feb 64 APPROVAL <i>Ed Foster</i> 7 Feb 64		NUT-SPLINE, SELF LOCKING, NYLON INSERT	
NASA APPROVAL <i>Ed Foster</i> MIT APPROVAL <i>Ed Foster</i> 3/3/64		CODE IDENT NO. SIZE C C	NASA DRAWING NO. 1016305
SCALE NONE		WT	SHEET 1 OF 1



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90E9101

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	CHANGE IN ACCORDANCE WITH CM 195955	28 MAR 64	R.W.J. EF

REQUIREMENTS:

1. GENERAL:

- INTERPRET DRAWING SYMBOLS, ABBREVIATIONS AND REFERENCE DESIGNATIONS IN ACCORDANCE WITH GOVERNMENT STANDARDS PRESCRIBED IN MIL-D-70327.
- SUPPLIER SHALL CONFORM TO QUALITY ASSURANCE PROVISIONS SPECIFIED IN ND 1015404, CLASS 3.

2. INSPECTION AND ACCEPTANCE:

A. MECHANICAL REQUIREMENTS:

(1) MATERIAL:

- HOUSING: TYPE 304 STAINLESS STEEL
- ELEMENT: TYPE 304 STAINLESS STEEL WIRE MESH
- SEAL: BUNA "N"

(2) DIMENSIONS: PER DRAWING AND TABLE.

(3) MARKING:

- PIECEMARKING: PART SHALL BE PERMANENTLY AND LEGIBLY MARKED PER MIL-STD-130 WITH THE NASA DRAWING NUMBER, DASH NUMBER AND REVISION LETTER.
- PACKAGE: INTERNAL INDIVIDUAL OR COLLECTIVE PACKAGES AND EXTERNAL PACKAGING SHALL BE MARKED WITH THE FOLLOWING INFORMATION PER MIL-STD-129.

SUPPLIER'S NAME

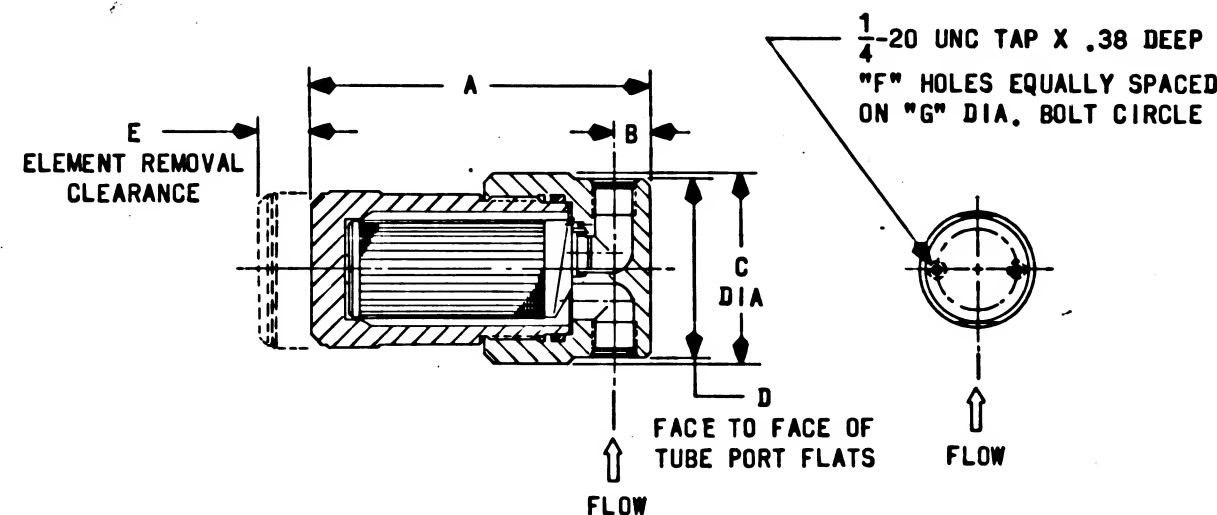
NASA DRAWING NUMBER, DASH NUMBER, AND REVISION LETTER.

DATE CODE, OR DATE OF MANUFACTURE.

- MANUFACTURER'S PART NUMBER MAY APPEAR ON THE PART OR PACKAGE.

3. DESIGN REQUIREMENTS:

- OPERATING PRESSURE: 6000 PSIG AT 100°F
- PROOF PRESSURE: 9000 PSIG AT 100°F
- MINIMUM BURST PRESSURE: 18,000 PSIG AT 100°F
- TEMPERATURE RANGE: -65°F TO 280°F
- 10 MICRON NOMINAL MESH SIZE (25 ABSOLUTE)



NASA DASH NUMBER	PORT SIZE	FILTER AREA (IN ²)	A	B	C	D	E	F	G	MANUFACTURER'S PART NUMBER (REF)
-001	1/4 NPT	23	3.25	.38	2.00	1.84	1.88	200	1.25	FR1-10-4PP
-010	REPLACEMENT ELEMENT FOR -001									R1-10-4

THE PART NUMBER IS THE DRAWING NUMBER PLUS THE APPLICABLE DASH NUMBER.

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		LIST OF MATERIALS	
	MIT INSTRUMENTATION LAB CAMBRIDGE, MASS Contract NAS 9-497	MANNED SPACECRAFT CENTER HOUSTON, TEXAS	
	DRAWN <i>D. Poff</i> DATE 17 FEB 64 CHECKED <i>Ed Foster</i> 10 FEB 64 APPROVAL <i>J. V. WEAN</i> 12 FEB 64 APPROVAL <i>Ed Foster</i> 12 FEB 64	FILTER	
	NASA APPROVAL <i>G. C. M. 2/24/64</i>	SPECIFICATION CONTROL DRAWING	
	MIT APPROVAL <i>W. L. 2/25/64</i>	CODE IDENT NO. SIZE C 1016306	NASA DRAWING NO. 1016306
		SCALE NONE WT	SHEET 1 OF 1